चटक - 002

Seat Number

* 2 4 6 9 *

ELECTIVE - I
Environmental Risk Assessment & Hazard Management
(1052)

P. Pages : 2

Time : Three Hours **Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with black ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any five** questions.

1. a) Discuss the environmental hazards of "radioactive fallout". **10**

b) What do you understand by risk assessment and risk management? Explain the difference between total risk and incremental risk. **10**

2. a) What do you understand by expert system? How it can be used in simulation modeling. **10**

b) Discuss same of the special problems in assessing risk to carcinogens as opposed to non carcinogens. **10**

3. a) Explain the difference between a hazard index and cancer risk. **10**

b) Explain the weakness of the risk assessment process and what steps may be taken to reduce the like hood that unsafe decision will be made on the basis of incorrect risk calculations. **10**

4. Explain the characteristics which make the waste hazardous? Describe the different sources of hazardous waste and their treatment options in details. **20**

5. a) What are the main routes of exposure by which the organism can be exposed to chemical substance present in the environment? **10**

b) What are the difference between acute and chronic exposure and how they relate to acute and chronic health effects? **10**

6. Discuss in details how "zero-waste discharge" concept can be implemented in an industry and producing hazardous waste. **20**

7. a) Briefly describe 10 measures for ensuring the safe operation of a hazardous waste facility. **10**

b) Discuss the process difference between an aqueous waste treatment facility and municipal sewage treatment plant. **10**

8. Write short note on following **20**

a) Criteria for sitting a hazardous waste incinerator.

b) Use of ANN in Environmental studies.

c) Waste management in Nuclear power plant.

d) Cradle - to - grave concept for hazardous waste management.

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चटक - 004

Seat Number

* 2 6 3 6 *

ELECTIVE - II
Architecture & Town Planning
(1122)

P. Pages : 2

Time : Three Hours **Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with black ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any five** questions.
5. Answers to all questions should be written in same answer book.
6. Figures to the right indicate full marks.
7. Assume suitable data if required.
8. Suitable diagrams are expected wherever necessary.

1. Discuss in brief the following civilization.

a) Indus valley civilization. **10**

b) Egyptian civilization. **10**

2. a) What do you understand by no-statutory town planning? **10**

b) Explain in detail 'Threshold Analyses'? **10**

3. a) Discuss the scope of town planning in India. **10**

b) What are the requirements of ideal city roads? **10**

4. a) Explain in brief the following factors considered in the design of town road?

   i) Nature of Traffic **5**

   ii) Utility services. **5**

   b) Explain with sketch the rectangular road system? **10**

5. a) Discuss in detail ' Maharashtra Regional and Town Planning Act 1966'. **10**

   b) State the importance of roads for the rural development. **10**

6. a) What do you understand by natural landscape and man made landscape? **10**

   b) What are the principles of landscape design? **10**

7. a) Write short notes on.

   i) Neighborhood Planning. **5**

   ii) Development Control Rules. **5**

   b) Explain in brief 'Geographical Information System' in planning a new town? **10**

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Seat Number

* 2 6 3 7 *

Advanced Design of Concrete Structures
(1030)

P. Pages : 2

Time : Four Hours **Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with black ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any four** questions.

1. Design an Interior Pannel of flat slab having equal Pannels 6 m X 6 m. The building is braced with shear walls. The pannel have drops 3 m X 3 m size. The depth of drop is 250 mm and that of slab is 200 mm. The internal columns are 500 mm diameter and the column head is 1000 mm in diameter. The storey height above and below the slab is 4 m. Take D.L = Self wt + 2.7 KN/m^2 as F.F. and partition walls and L. L = 4 KN/m^2. Use M 20 and Fe 415. **25**

2. Design a Grid floor of size 14 m X 17.5 m with spacing of ribs as 1.75 m both way. Assuming slab thickness as 150 mm. Take L. L = 4.5 KN/m^2 and F.F=1.5 KN/m^2 use M20 & Fe 415. Draw details of reinforcement.

3. Design the composite beam for following data. **25**

1) Span of beam - 18 m.

2) Thickness of slab - 175 mm.

3) Total load on beam = 23 KN/m.

4) Flange width of slab = 1800 mm.

5) Use I-section from steel tables.

4. a) A Rectangular beam curved in plan of size 350 mm X 1000 mm. depth is in the form of circular arc subtending an angle of 45° at the centre and fixed at the two ends. It is loaded with U.D.L 150 KN/m. Draw shear, moment and Torque diagrams for the beam. Radius of the beam is 3.6 m and Take G = 0.4 E for concrete. **15**

   b) A square slab of side length 4 m is simply supported at the ends carries service load of 3 KN/m^2. Design the slab using yield line theory use M 20 & Fe 415. **10**

5. Design a slab pannel fixed on all edges, Having Mu same in both directions at top and bottom, pannel size 7 m X 9 m use M 20 & Fe 500. **25**

6. a) Design a pile under column transmitting and axil load of 600 KN. The pile is to be driven to hard strata available at 8 m depth. Take $\sigma_{cc} = 4\,N/mm^2$ and $\sigma_{sc} = 130\,N/mm^2$. **15**

   b) A R.C.C. column 400 mm X 400 mm carrying a load of 600 KN, it is supported on three piles 400 mm X 400 mm in section. The Centre to centre distance between piles is 1.5 m. Design the suitable pile cap using M 20 concrete. **10**

7. Design a spherical dome over a circular room for the following data. **25**

   i) Inside diameter of room = 12 m.

   ii) Rise of dome = 4 m.

   iii) Live load = 1.5 KN/m^2.

   The dome has an opening of 1.6 m diameter at its crown. A lantern is provided at its top having D. L.=22 KN acting along the circumference of opening.

8. Explain in Detail. **25**

   1) Design of High Performance Concrete.

   2) Any two methods of NDT Testing.

   3) Under water Concreting.

   4) Use of Superplasticizers in HPC.

   5) Difference between HPC and HSC.

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चटक - 008

Seat Number

* 2 6 3 8 *

Construction Techniques & Equipments
(1080)

P. Pages : 2

Time : Three Hours **Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with black ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any five** questions.
5. Use of non-programmable calculator is allowed.
6. Figures to the right indicate full marks.
7. Assume suitable data if necessary.

1. a) What are the basic parts of a "Dragline". Draw sketch and give difference in shovel and a dragline. **10**

b) Enlist types of hauling equipments. Describe the difference between crawler mounted tractor and wheel tractors. **10**

2. a) What are the essential parts of a belt conveyer system. Explain. **10**

b) Describe any one type of crane with neat sketch. **10**

3. a) What are the different types of Pile driving hammers. Describe any one with sketch. **10**

b) Give classifications of crushers and explain various operations with sketch for material flow dia. closed circuit stage crushing. **10**

4. a) What operations are involved in concrete production equipments. Explain. **10**

b) Give classification of principal types of concrete mixer. Explain operations of Drum type mixer and advantages. **10**

5. a) What aspects are needed to be considered at selection stage of construction equipments. Discuss factors which effect the economic & useful life of equipment. **10**

   b) Which factors effect the management of equipments, in cost of owning & operating, Explain. **10**

6. a) Enumerate the different types of piles and describe any one with sketch. **10**

   b) What are the various types of spread footing foundations. Describe any one with sketch. **10**

7. Write short notes on **any four.** **20**

   i) Dregess.

   ii) Sheep foot roller.

   iii) Belt conveyors.

   iv) Concrete pumps.

   v) Maintenance of equipments.

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चटक - 009

Seat Number

* 2 6 3 9 *

Contracts & Valuations
(1040)

P. Pages : 2

Time : Three Hours **Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with black ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.

1. a) Differentiate between cost, price and value with examples. Discuss the factors affecting value of property consisting of land and buildings. **10**

b) Detail out all the basic steps required to form a valid contract as per the requirements of ICA (1872). **10**

2. Elaborate on any 10 purposes of valuation, explaining which types of value are useful in each purpose. **20**

3. a) With a neat sketch, explain the land belting concept and its utility in valuation. **10**

b) Explain in brief any 5 important general conditions of contract. **10**

4. Explain in detail any 4 methods used for working out depreciation of any asset. Discuss the suitability and limitations of these methods. **20**

5. a) Determine the F.M.V. of the property using the reproduction cost method of valuation for. **10**

i) Plot Area – 100_m X 50_m
ii) F. S. I. Permissible – 1
iii) F.S.I. consumed – 0.8
iv) Land rate incivility → Rs 1000 per m^2 of plot area
v) Present day construction → Rs 15,000 per m^2 of built – up area cost.

vi) Year of construction → 1965
vii) Total life of building → 75 years
viii) Interest rate on sinking fund → 5%
ix) Year of valuation → 2013

Assume any other data if necessary.

b) Explain following terms with examples. **10**
i) Deferred value of land.
ii) Year's purchase.
iii) Distress value
iv) Outgoings.
v) Easement.

6. a) In PWD, explain B1 and B2 types of contracts used. Discuss their advantages and limitations. **10**

b) Explain the contents and the importance of the 0-1 format used for submitting a valuation report. **10**

7. a) Explain in detail rental method of valuation. **10**

b) Detail out the quantitative method of evaluating the pre – qualifications put in any global tender. **10**

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Seat Number

* 2 6 4 0 *

Earthquake Resistant Design of Buildings
(1090)

P. Pages : 2

Time : Four Hours **Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with black ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any five** questions.

1. a) Describe the two approaches followed for the prediction of earthquakes. Name the major plates of the earth. **10**

b) Discuss the main characteristics of seismic waves. **10**

2. a) What are the various types of dynamic loads ? State some of the characteristics of seismic loads. **10**

b) Write short note on **any two.** **10**
i) Response spectra.
ii) Inertia force.
iii) Damping.

3. a) State the soil conditions under which liquefaction can occur. **10**

b) Discuss how soil and structure interact during an earthquake. **10**

4. a) Write short note on **any two.** **10**
i) Strength and stiffness.
ii) Stiff and flexible buildings.
iii) Simplicity and symmetry.

b) A building should exhibit ductile behaviour in earthquake prone regions. Do you agree with this statement ? If yes then give the measures and provisions you would make at the conceptual stage to make a building stiff. **10**

5. a) What are the two seismic design requirements an engineer has to account for in the analysis and design of earthquake resistant buildings ? Discuss briefly how these are in corporated to achieve the objective. **10**

   b) Write short note on **any two.** **10**

      i) Isolating devices.

      ii) Energy dissipation devices.

      iii) Properties of construction material for earthquake resistance.

6. Discuss in details the applications of various computer software in the field of "Earthquake Resistant Design of buildings. **20**

7. a) What are the possible damages to R.C.C. buildings in earthquake – prone regions ? **10**

   b) Describe with the help of neat sketches, restoration and strengthening of R.C.C. beams and columns. **10**

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Seat Number

* 2 6 4 1 *

Construction & Project Management
(1020)

P. Pages : 2

Time : Three Hours **Max. Marks : 10**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with black ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any five** questions.

1. Write notes on **20**

a) Methods of Job evaluation.

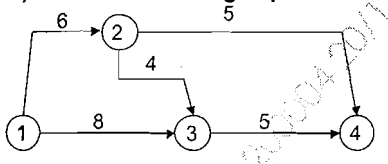
b) 14 principles of Fayol.

2. a) What are various types of project appraisals? Briefly describe them. **10**

b) List various methods of quality control. Discuss pareto chart & Fish bone diagram in detail. **10**

3. a) Compress the given network to find cost of project for 10 weeks durations. **20**

b) Draw cost graph.



Activity	Normal cost	Normal duration	Crash cost	Crash Duration
1-2	7000/-	6	14500/-	3
1-3	4000/-	8	8500/-	5
2-3	6000/-	4	9000/-	1
2-4	8000/-	5	15000/-	3
3-4	5000/-	5	11000/-	3

4. a) List various types of organizations. Discuss & compare line & staff organizations with their benefits & drawbacks. **10**

b) Describe cost of quality & quality circles. **10**

5. a) Why & when the project is updated? Give example. **10**

b) Comment on resource leveling & allocation. What are the benefits of resource levelling? **10**

6. a) Form the given data, level the resource if only 4 machines are available with the company. Find effective force ratio from final histogram. **15**

Activity	1-2	1-3	2-3	2-4	3-6	4-5	5-6
Duration (Days)	7	7	8	6	9	3	5
Machines Per day	2	2	3	4	2	2	3

b) Compare CPM & PERT. **5**

7. a) Write notes on sampling techniques & list statistical methods. **10**

b) Define following terms & write their importance. **10**

i) Variance.
ii) Free Float
iii) Weighted mean
iv) Net present value
v) Cost of poor quality.

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चटक - 012

Seat Number

* 2 6 4 2 *

Low Cost Housing
(1100)

P. Pages : 2

Time : Three Hours **Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with black ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any five** questions.

1. a) Write a note on 'Rajiv Awas Yojana'- a step towards 'Slum free India' by highlighting major clauses, success & failure issues. **10**

b) Write & detailed note on- 'Mud Housing' as low cost housing technique. **10**

2. a) Provide alternatives to solve affordable housing problem. **10**

b) List ten materials used in low cost housing construction. Write the purpose of using them as 'low cost housing materials'. **10**

3. a) Discuss major clauses of National Housing & Habitat Policy 1998. Also mention its aims & objectives. **10**

b) Write role of world bank and National Housing Bank in affordable housing. **10**

4. a) Recycled aggregate - An alternative to natural aggregate. Comment with pros & cones. **10**

b) What are various techniques of Low Cost Sanitation? Describe them briefly. **10**

5. a) List damages generally occur to houses in earth quake prone areas. Provide solution to them. **10**

   b) Write a note on 'Economical Walling Systems'. **10**

6. a) What is the importance of pre-cost elements in low cost housing technology? List various precast housing elements & briefly describe the procedure to use them. **10**

   b) What is 'Mass Housing'? List the challenges faced in upgrading & developing slum areas. **10**

7. a) Comment on 'illegal housing in India' & its impact on affordable housing & basic services, healthy & safe environment. **10**

   b) Enlist cost effectiveness and advantages & disadvantages of low cost housing techniques. **10**

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चटक - 013

Seat Number

* 2 6 4 3 *

Building Environment & Services
(1010)

P. Pages : 2

Time : Three Hours **Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with black ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any five** questions.
5. Illustrate your answers with suitable sketches.
6. Answers should be written in same answer books.

1. a) What are the effects of noise? How noise control from walls & floors/celling can be done? **10**

b) Explain natural & artificial ventilation in buildings. **10**

2. a) Discuss the design of lighting system for buildings. **10**

b) Define 'Day light factor'. Explain the different components of day light factor. **10**

3. a) What are the principles of non-conventional energy systems? Expiain. **10**

b) How to achieve energy conservation in buildings. **10**

4. a) Discuss the approval procedures for water supply & sanitary schemes for buildings. **10**

b) State the bye-laws governing the design & installation of elevators, escalators & conveyers. **10**

5. a) What is antisiphon & vent piping in building drainage system? Explain with sketch. **10**

b) What are the characteristics of Gas Services & distribution piping for domestic gas supply? **10**

6. a) Draw layout of swimming pool complex showing all its components. State the purpose of springboards & pressure filters. **10**

b) Using a neat diagram, explain external drainage system for a building. **10**

7. a) Discuss important points in installation of sanitary system. **10**

b) Explain roof water harvesting & water conservation. **10**

8. a) Discuss fire protection of buildings. **10**

b) What are the systems of plumbing? Explain any two with neat sketch. **10**

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चटक - 014

Seat Number

* 2 6 4 4 *

Construction Cost Dynamics
(1110)

P. Pages : 2

Time : Three Hours **Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with black ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any five** questions.
5. Draw neat sketches wherever necessary.
6. Assume suitable data if necessary.

1. a) Explain in brief, five important principles of Economics. **10**

b) Explain with example Net Present Worth. **10**

2. a) Write about financing of Project. **10**

b) What is discounted cash flow method? Explain any one. **10**

3. a) Explain sensitivity analysis with its merits and demerits. **10**

b) State advantages and disadvantages of equity capital. **10**

4. a) Explain in brief phases of capital budgeting. **10**

b) Explain in brief methods of estimation of building costs. **10**

5. a) Explain in brief cost control during different phases of construction. **10**

b) Explain any five types of risks involved in building construction project. **10**

6.	a)	Explain relevant costs and irrelevant costs of project.	**10**
	b)	Explain five important features of capital market.	**10**
7.	a)	Write the procedure of master budget preparation.	**10**
	b)	Explain in brief cash flow forecast with suitable example.	**10**
8.		Write short notes **any four**	**20**

i) Debentures

ii) Dividend policies

iii) Sinking fund

iv) Cost composition

v) Cost of hazard

vi) Public deposits.

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