(DCE 411)

B. Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Fourth Year First Semester)

CIVIL ENGINEERING

Paper – I : Advanced Structural Analysis -II

Time : 3 Hours **Maximum Marks: 75**

Answer Question No.1 is compulsory ***(15)***

Answer one question from each unit ***(4×15 = 60)***

1) a) Write any two uses of Muller – Breslau principle.

b) When we will say a beam is statically Indeterminate.

c) Define a curved beam.

d) What is plastic design.

e) Define plastic modulus.

f) What is load factor.

g) State static theorem.

h) What are the other names attributed to flexibility method.

i) What is principle of super position.

j) Write the compatibility equation of a structure with indeterminacy of order one.

k) List the advantages of stiffness method.

l) What is the basic methodology of stiffness method of analysis.

m) Define structure stiffness matrix.

n) Write any two applications of Muller – Breslau principle.

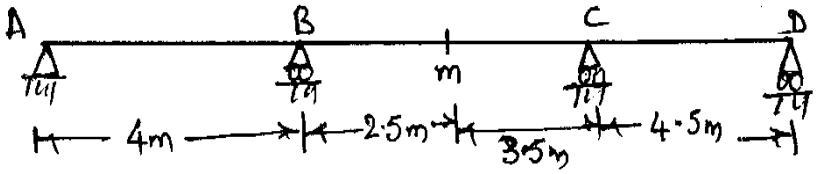
o) Define upper bound theorem.

UNIT - I

2) A semicircular girder is fixed at both ends and is subjects to a uniformly distributed load over its time spar. Determine the expression for moment at mid- span. Also determine the expression for bending moment, shearforce and torsional moment at any point in the beam.

OR

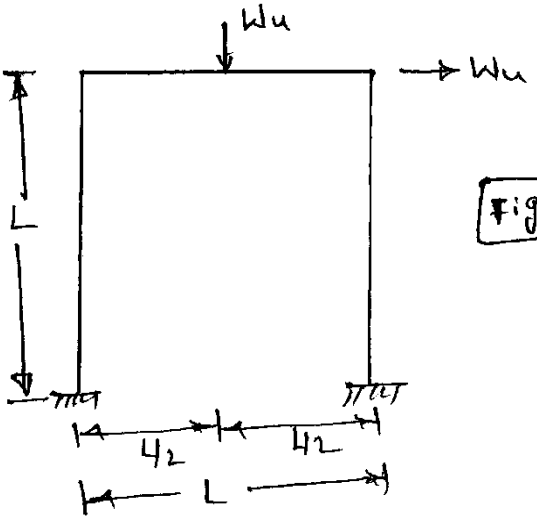
3) Construct the influence line for shearing force at the section 'm' of the uniform continuous beam shown in fig 1.



Fig①

UNIT - II

4) Determine the value of the plastic moment of resistance of a potal frame shown in fig 2 in terms of the collapse load parameter Wu.



Fig②

OR

5) Determine the collapse load of a propped beam carrying UDL WKN/m shown in fig3 by static and kinematic methods.

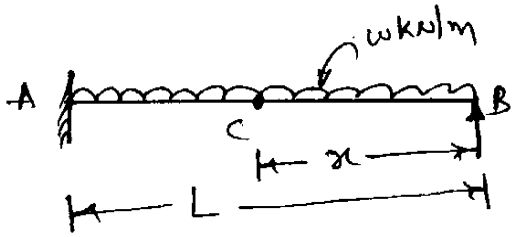


Fig ③

UNIT - III

6) Analyse the continuous beam shown 4 is figure by flexibility method and draw bending moment and shear force diagrams. Flexural stiffnesses are given in parentheses.

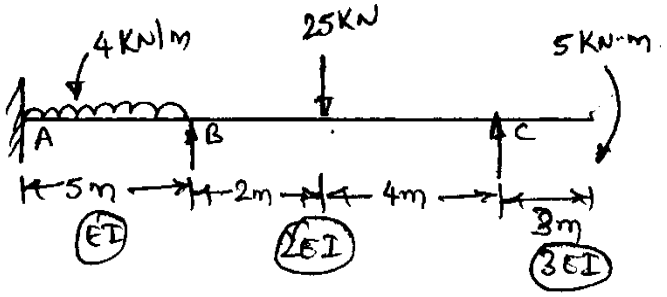


Fig ④

OR

7) Analyse the potal frame ABCD shown in fig 5 by flexibility matrix method. EI is constant throughout.

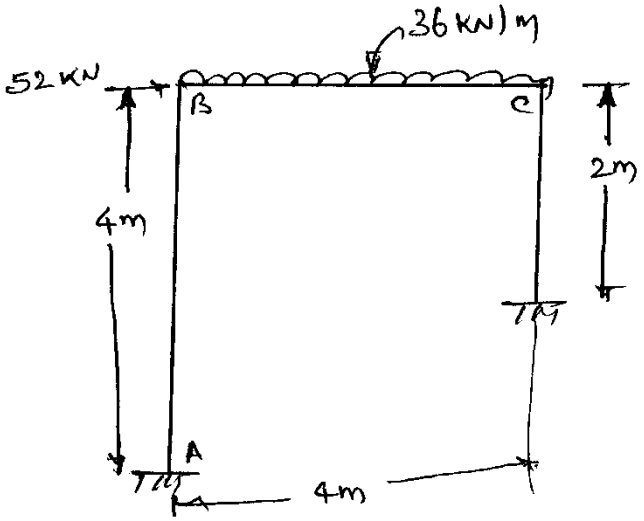


Fig ⑤

UNIT - IV

8) Analyse the beam shown in figure 6 using stiffness matrix method. Draw BMD and SFD.

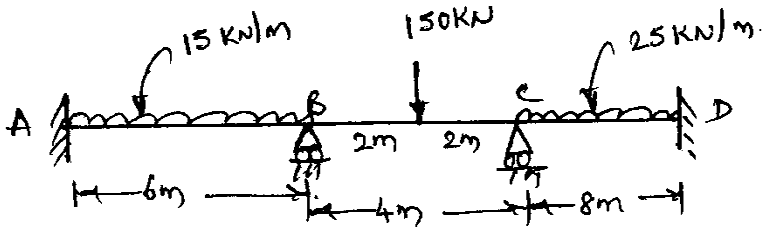


Fig (6)

OR

9) Analyse the frame shown in fig 7 by stiffness matrix method.

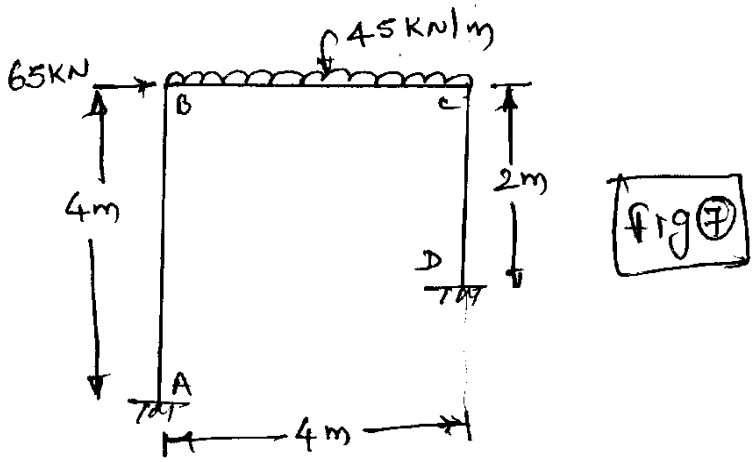


fig (7)

EEE

(DCE 412)

B. Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Fourth Year First Semester)

CIVIL ENGINEERING

Paper – II : Earthquake Engineering

Time : 3 Hours **Maximum Marks: 75**

Answer Question No.1 is compulsory ***(15)***

Answer one question from each unit ***(4×15 = 60)***

1) a) Define damped frequency.

b) State D′ Alembert's principle.

c) How do human activities induce earthquakes.

d) What is meant by the focus of an earthquake.

e) What are the various types of dynamic loads.

f) State any two characteristics of seismic loads.

g) Write any two factors that effect liquefaction.

h) What do you mean by stiff and flexible buildings.

i) What are the two seismic design requirements.

j) List out the energy dissipation devices.

k) What do you mean by unreinforced masonry walls.

l) List out various types of masonry walls.

m) Draw neat sketch for slab-to slab parels connections.

n) What do you mean by Hysteretic behaviour of steel.

o) List out the effects of liquefication.

UNIT - I

2) a) Derive the expression for the displacement of damped fee vibrations of SDOF system under critical damping condition. Sketch the response.

b) What are the natural frequencies and mode shapes?

OR

3) A vibrating system consisting of a weight of W= 10 kg and a spring with stiffness K = 20 kg/cm is viscously damped so that the ratio of two consecutive amplitudes is 1.000 to 0.85 determine:

a) The natural frequency of the undamped systems.
b) The logarithmic decrement.
c) The damping ratio.
d) The damping co-efficient.
e) The damped natural frequency.

UNIT - II

4) Determine the natural frequencies of vibration and corresponding mode shapes for the 3-storied building frame. Shown in the figure below.

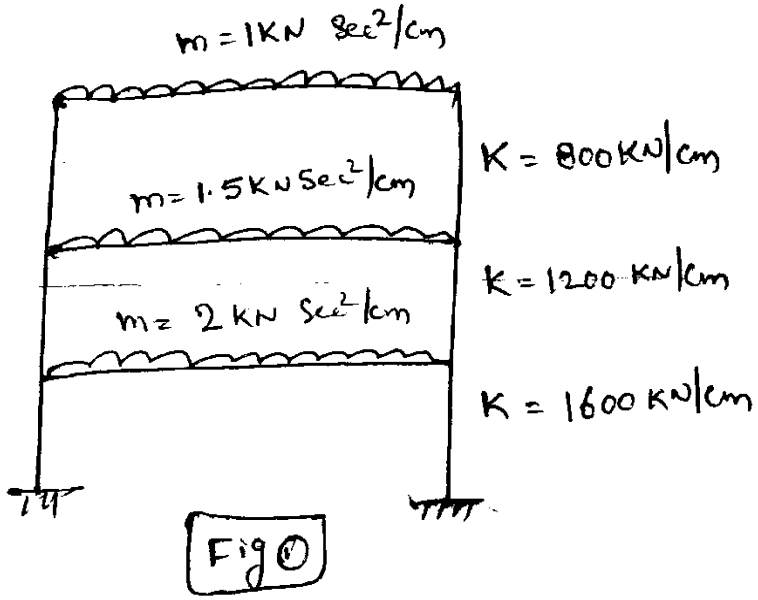


Fig ①

OR

5) Explain the response spectrum analysis procedure to compute the peak response of a 2 storey building with plan symmetric about two orthogonal axes to earthquake grand motion along an axis of symmetry.

UNIT - III

6) a) What are the various methods of restoring an earthquake damaged masonry buildings.

b) What special precautions should be exercised during planning and construction of openings in a masonry wall?

OR

7) a) What are the possible damages to RCC buildings in earthquake prove regions.

b) Describe, with the help of neat sketches, restoration and strengtheing of RCC beams and columns.

UNIT - IV

8) a) What are the causes of in stability of steel buildings? Discuss in detail the P- deffect.

b) State and discuss briefly the considerations for achieving adequate performance of steel buildings.

OR

9) a) Derive an expressions for the condition under which a structure will sink during an earthquake.

b) State the soil conditions under which liquefaction can occur.

EEE

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B.Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Final Year)

CIVIL ENGINEERING

Paper – III : Water Resources Engineering-III: Design & Drawing

Time : 3 Hours **Maximum Marks: 75**

All questions carry equal marks.

UNIT-I

1) Design and draw a trapezoid notch fall of 2m with the following data.

i) Hydraulic particulars of the canal above drop.

a) Full supply discharge = 4.5 m^3 / s

b) Bed width = 7.00 m

c) Bed level = +16.00 m

d) Full supply depth = 1.5 m

e) Full supply level = +17.50 m

Top of bank 2m wide at level +18.50

Half supply depth = 1.00 m

ii) Hydraulic particulars of the canal below drop

a) Full supply discharge = 4.5 m^3 / s

b) Bed width = 7.00m

c) Bed level = +14.00 m

d) Full supply depth = 1.5 m

e) Full supply level = +15.50

Top of bank 2m wide at level + 16.50

Good soil is available for foundation at +14.00 m.

OR

2) Design a glacis weir for the following data obtained at the site.

i) Maximum discharge intensity on weir crest = 12.5 cumec/m

ii) H.F.L. before construction if weir = 225.00 m

iii) River Bed level = 218.75 m

iv) Pond level = 224.00 m

v) Height of crest shutters = 1.5 m

vi) Anticipated downstream water level in the river when the weir is discharging with pond level upstream = 221.50 m

vii) Bed retrogression = 0.5 m

viii) Lacey's silt factor = 0.9

ix) Permissible flux = 1m

x) Permissible exit gradient = $^1/_7$

UNIT-II

3) Design and draw a tank sluice with tower head for the data given below.

i) Ayacut to be irrigated = 200 ha

ii) Duty = 900 ha/cumec

iii) Top width of the tank bund = 2m with 2:1 side slopes

iv) Top level of the bank = +140.00

v) Ground level at the site = +134.00

vi) Hard soil for foundation = +133.00

vii) The sill of the sluice at off take = +133.50

viii) The maximum water level in tank = +138.00

ix) Full tank level = +137.25

x) Avg. low water level of tank = + 134.25

xi) Channel bed level = +133.50

xii) Full supply level = +134.00

xiii) Bed width = 1.2 m

xiv) Side slopes of the channel = 2:1 with top of bank at +135.00

OR

4) Design and draw an under tunnel to suit the following hydraulic data:

Canal:-

i) Discharge = 15 m^3 / s

ii) Bed width = 14 m

iii)	Bed level	=	+17.00 m
iv)	F.S.L	=	+19.00 m
v)	Full supply Depth	=	2.00 m
vi)	Ultimate Bed level	=	+ 16.75 m
vii)	Ultimate F.S.L	=	+19.50 m
viii)	Velocity of flow in the canal	=	0.49 m/s
ix)	Avg. Bed level of drain	=	+15.00 m
x)	Left bank top width	=	5 m
xi)	Right Bank top width	=	2 m
xii)	Top of the bank level	=	+20.50

Drain :

i) Catchment Area = 3.5 Km^2

ii) Maximum flood level of the natural drain at the site = +16.50 m

iii) Hard soil for foundation is at + 14.50 m.

(DCE 414)

B.Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Fourth Year First Semester)

CIVIL ENGINEERING

Paper – IV : Environmental Engineering-II

Time : 3 Hours **Maximum Marks: 75**

Answer question No.1 is compulsory ***(15)***

Answer one question from each unit ***(4×15 = 60)***

1) Explain the following:

a) Conservancy system.

b) Flushing tanks.

c) Grease and Oil Traps.

d) BOD and COD.

e) Skimming Tanks.

f) Activated sludge process.

g) Incineration.

h) Sewage.

i) Sewer.

UNIT - I

2) a) Explain the conservancy and water carriage system.

b) Write about any of two sewer appurtenances with neat sketch.

OR

3) a) State various types of water carriage systems and briefly describe their relative merits and demerits.

b) Explain the following:

i) Manholes

ii) Drop manholes

iii) Lamp holes

UNIT - II

4) a) Draw the flow diagram of primary treatment of sewage and briefly explain the unit operations.

b) Explain about decomposition of sewage.

OR

5) a) Write about imhoff tank and septic tank?

b) Describe the disposal of septic tank effluent?

UNIT - III

6) a) Explain the activated sludge process Vs trickling filter?

b) Explain the mehods of aeration?

OR

7) Explain the following:

a) Oxygen sag

b) Sludge bulking

c) Ground water recharge

UNIT - IV

8) a) Describe the characteristics of sewage sludge?

b) Explain the methods of sludge disposal?

OR

9) Explain the following:

a) Reuse & recovery

b) Composting

c) Sanitary landfill

EEE

(DCE 415)

B. Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of IVth Year First Semester)

CIVIL ENGINEERING

Paper – V : Estimation & Valuation

Time : 3 Hours **Maximum Marks: 75**

Answer Question No.1 is compulsory ***(15)***

Answer one question from each unit ***(4×15 = 60)***

1) a) What are the two types of methods in building estimates.

b) Write different units of measurement.

c) Define individual wall method.

d) Write a short note on centre line method.

e) Calculate the quantity of brick work in a 60^{o} arch over a door of 1.20m width. The arch is 20 cm thick and thickness of wall is 30 cm.

f) Calculate the quantity of arch work in a flat arch over a door of 1.20 m width. The thickness of arch is 30 cm and breadth of wall is 30 cm.

g) What is the importance of Road Estimation.

h) Write a short note on Mid-sectional area method for earth work of Road Estimation.

i) Define mosaic flooring.

j) What is the importance of degree of accuracy.

k) Define floor area.

l) Write a short note on standard Rent.

m) Write a short note on salvage value.

n) What is mean by life of structure.

o) Define scrap value.

UNIT - I

2) a) What are the different methods of estimating? Explain them briefly?

b) An arch of 2.50m span subtends an angle of 80^{o} at the centre. The thickness of arch is 30 cm, and the breadth of wall is 42cm. Calculate the quantity of masonary work.

OR

3) What are the different cases for arch masonary calculations? Briefly explain any two cases.

UNIT - II

4) Estimate the cost of Earth work for a preparation of a Road from the following data. Road width at the formation surface is 8 m and side slopes 2:1 in banking and $1\frac{1}{2}:1$ in cutting. Length of chain is 30 met and formation level 70.00, upward gradient of 1 in 200. Take the rates of earth work as Rs. 275/- per% cum in banking and Rs. 350/- per % cu-m in cutting.

Chainage	20	21	22	23	24	25	26	27	28	29	30
Ground levels	71.20	71.25	70.90	71.25	70.80	70.45	70.20	70.35	69.10	69.45	69.70

OR

5) Explain briefly estimation of earth work in irrigation channels.

UNIT - III

6) a) Explain general specifications of a first class building.

b) Write detailed specifications for Earth work in excavation in foundations.

OR

7) Prepare analysis of rates for 1 cum R.L.C. work in column $1:1\frac{1}{2}:3$

UNIT - IV

8) a) Define valuation? Explain purpose of valuation.

b) Briefly explain methods of valuation.

OR

9) Write a short note on:

a) Plinth area

b) Sinking fund

c) Year's purchase

d) Annuity

EEE

(DCE 416 A)

B.Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Final Year)

CIVIL ENGINEERING

Paper - VI : Prestressed Concrete

Time : 3 Hours **Maximum Marks: 75**

Answer Question No.1 is compulsory ***(15)***

Answer ONE question from each unit ***(4×15 = 60)***

1) a) Define prestressing.

b) What is a need for High strength steel?

c) Write any two advantages of prestressed concrete.

d) List out tensioning devices.

e) What is the necessity of chemical prestressing?

f) Write any two losses of prestressing.

g) Write any two basic assumptions of prestressing.

h) What is the main function of tendon?

i) What is main importance of control of deflections?

j) Define shear stresses.

k) Write the importance of shear reinforcement.

l) Define transmission length.

m) What is the importance of endzone reinforcement?

n) How stress distribution is done in end block?

o) What are Type – II and Type – III members?

UNIT - I

2) a) What are the principles of prestressing in pretensioning and post tensioning?

b) What are the various states of loading stages to be considered in the design of prestressed concrete structures?

OR

3) a) Explain with neat sketch Magnel Blaton system of prestressing.

b) Explain bonded and unbounded tendons.

UNIT - II

4) A concrete beam having rectangular section 100mm wide and 300mm deep is prestressed by a parabolic Cable carrying an initial force of 260kN. The cable has an eccentricity of 50mm at the centre of the span and is concentric at the supports. If the span of the beam is 10m and the live load is 2kN/m, estimate the short term deflection at the centre of span. Assuming E = 38 kN/mm^2 and creep coefficient = 2.0, loss of prestress = 20% of the initial stress after 6months, estimate the long term deflection at the centre of the span at this stage, assuming that the dead and live load are simultaneously applied after the release of prestress.

OR

5) A rectangular concrete beam 250mm wide by 300mm deep is prestressed by a force of 600kN at a constant, eccentricity of 60mm. The beam supports a concentrated load of 70kN at the centre of a span of 3 mts. Determine the location of the pressure line at the centre, quarter span and support sections of the beam. Neglect the self – weight of the beam.

UNIT - III

6) A prestressed I-section of minimum overall depth 300mm is required to have an ultimate flexural strength of 100kNm. Find

a) suitable minimum dimensions of the top flange, and

b) the total number of 5mm wires required in the bottom flange.

The cube strength of concrete is 70N/mm^2 and the tensile strength of steel is 1600N/mm^2.

OR

7) A prestressed concrete beam of rectangular section, of a 250mm width and 500mm overall depth, is provided with a supplementary reinforcement. Consisting of four deformed bars of 20mm diameter at an effective cover of 50mm from the soffit. If the increase of stress in the untensioned reinforcement from the stage of decompression of concrete to the service load is 120N/mm^2, estimate the maximum width of cracks developed at the soffit of the beam using the British code (BS: 8110 – 1985) method. Assume E_s = 200 kN/mm^2 and E_C = 28 kN/mm^2.

UNIT - IV

8) A post – tensioned beam of rectangular cross-section; 250mm wide and 450mm deep, is 10mts long and carries an applied load of 10kN/m, uniformly distributed on the beam. The effective prestressing force in the cable is 520kN. The cable is parabolic with zero eccentricity at the supports and a maximum eccentricity of 140mm at the centre of span.

a) Calculate the principle stresses at the supports.

b) What will be the magnitude of the principal stresses at the supports in the absence of prestress?

OR

9) A pretensioned beam of rectangular section, 200mm wide by 450mm deep, is prestressed by 10 wires of 5mm diameter located at an effective eccentricity of 150mm. The maximum shear force at a particular section is 150kN. If the modular ratio is 6, calculate the flexural bond stress developed assuming.

a) The section as uncracked.

b) The section as cracked.

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(DCE 416 B)

B.Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Final Year)

CIVIL ENGINEERING

Paper – VI : Structural Dynamics

Time : 3 Hours **Maximum Marks: 75**

Answer Question No.1 is compulsory ***(15)***

Answer one question from each unit ***(4×15 = 60)***

1) a) What do you mean by dynamic analysis?

b) Define 'D' Alembert's principle.

c) Define free vibration.

d) What do you mean by viscous damping.

e) Write the fundamental objective of structural dynamics analysis.

f) Define random dynamic loading.

g) What are the essential characteristics of a dynamic problems.

h) What do you mean by under critically –damped systems.

i) Define transient response in case of harmonic loading.

j) What is importance of improved Rayleighs method.

k) Write stiffness equation to the shear building.

l) What do you mean by free vibration of a shear building.

m) Define base Isolation.

n) Define Newtons law of motion.

o) What do you mean by degrees of freedom.

UNIT - I

2) a) Explain in detail the force-displacement relation with a help of neat sketches.

b) Write short notes on stiffness , damping and mass components.

OR

3) Explain briefly the following terms.

a) Critically –damped system

b) Analysis of undamped free vibrations.

UNIT - II

4) a) Explain band width method to evaluate damping.

b) A.S.D.O.F has an undamped natural frequency of 5 rad/sec and damping factor of 20%. It is given that initial conditions. $X_0 = 0$, $X_0^1 = 0.2$ m/sec, then detemine the damped natural frequency and expression for $t > 0$.

OR

5) A quarter cosine –wave impulse is expressed as $P(t) = P_0 \cos \bar{\omega} t \; 0 < t < \frac{\Pi}{2\omega}$.

a) Derive an expression for the response to this impulse, starting from vest.

b) Determine the maximum response ratio. $R_{max} \frac{V_{max}}{P_0/k}$ if $\bar{\omega} = \omega$.

UNIT - III

6) a) Explain briefly the principle of virtual work.

b) Explain in detail the step by step procedure of Rayleigh's method.

OR

7) A machine of weight of 80 kN is mounted on a S.Sbeam of span 3.5 mts. A piston that moves up and down in the machine produced a harmonic force of magnitude F=140 kN and frequency ω = 60 rad/sec. Neglect the weight of the beam and assume 20 y. Critical damping. Determine the amplitude of motion of machine, force transmitted to the supports and phase angle.

UNIT - IV

8) Explain in detail the following terms.

a) Step by step procedure of model superposition method.

b) Response of a shear building of base motion.

OR

9) Write a brief note on the following.

a) Analysis of vibration mode shapes.

b) Flexibility for mutation of vibration analysis.

(DCE 416 C)

B.Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Fourth Year)

CIVIL ENGINEERING

Paper – VI : Finite Element Analysis

Time : 3 Hours **Maximum Marks: 75**

Question No.1 is compulsory ***(15)***

Answer ONE question from each unit ***(4×15 = 60)***

1) a) Write any three applications of finite element method.

b) Define principle of virtual work in FEM.

c) Mention any two energy principles.

d) Write linear constitution law.

e) State linear stain triangle.

f) What do you mean be axisymmetric loading.

g) Define shape functions.

h) List out any two solution techniques.

i) Write any two differences between global co-ordinates and local co-ordinates.

j) Define subparametric element in FEM.

k) Define plane stress and plane strain.

l) Define tractive force and lumped loads.

m) Why physical interpretation of finite element method is necessary.

n) Write any two basic principles of element stiffness matrix.

o) Define static condensation.

UNIT - I

2) a) Explain the strain-displacement relations.

b) Discuss the finite element modeling of a one dimensional bar element.

OR

3) Calculate the maximum deflection for a simple supported beam subjected to UDL of intensity W_o per unit length and a central concentrated load W and UDL is throughout the whole span. Use Rayleigh –Ritz method.

UNIT - II

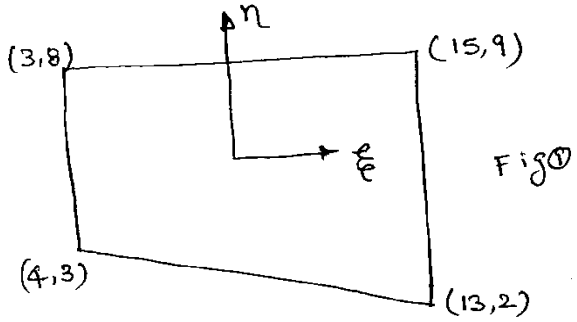
4) a) Discuss the formulation of isoparametric CST element.

b) Discuss the lagrangian and serendipity elements.

OR

5) A four node Quadilateral element is shown is fig 1. The nodal displacement vector is given as.

$\bar{U} = [0.0 \quad 0.0 \quad 0.15 \quad 0.10 \quad 0.10 \quad 0.125 \quad 0.20 \quad 0.0]^T_{cm}$



Fig①

Find the following

a) The X and Y co-ordinates of a point 'P' whose location in the element is given by $\xi = 0.5$ and $\eta = 0.5$ and

b) The u,v displacements of the point P.

UNIT - III

6) a) What is CST element? Show that why it is called as CST element with proof.

b) Determine the Jacobian of the transformation J for the triangular element shown in the fig.2.

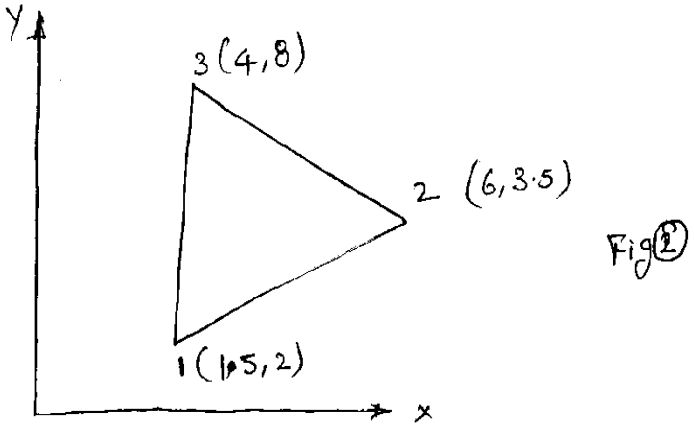


Fig (2)

OR

7) Write short-notes on.

a) Static condensation.

b) Solution technique for static loads.

UNIT - IV

8) a) Write the constitutive relationships for a linear, elastic, homogenous.

i) Anisotropic material

ii) Isotropic material

iii) Orthotropic material

b) In a plane strain situation σ_x = 150 MPa, σ_y =100Mpa, E = 2×10^5 MPa and poissons ratio u= 0.25. Find the values of σ_x and E_x, E_y.

OR

9) Write short notes on.

a) Incompatible displacement models.

b) Application to plane stress analysis of a gravity dam.

(DCE 421)

B.Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Fourth Year Second Semester)

CIVIL ENGINEERING

Paper - I : Advanced Design of Structures

Time : 3 Hours **Maximum Marks: 75**

Answer all questions

All questions carry equal marks

UNIT - I

1) Design a flat bottom circular elevated water tank of diameter 10 m and total height 4 m which is to be supported by ring beam 7-5 m diameter. The ring beam is to be supported by six columns equally placed. Use M_{25} concrete and Fe_{415} steel. Design the following components of water tank.

a) Top dome b) Top ring beam

c) Cylindrical wall d) bottom slab

OR

2) Design an Intz type water tank of capacity 2 million liters supported on symmetrically placed 8 columns. Use M_{25} concrete and fe_{415} steel.

UNIT - II

3) Explain the various types of IRC loadings in the design of highway bridges.

OR

4) A reinforced concrete box culvert is required for a national highway crossing. The clear vent way of the box culvert is 4 m by 4 m. Design the box culvert assuming a super imposed dead load of 12 kN/m^2 and a live load of 50 kN/m^2. The density of the soil is 16 kN/m^3. Use M_{25} grade of concrete and Fe_{415} steel.

UNIT – III

5) Design the interior slab panel of a reinforced concrete T-beam bridge using the following data clear width of road way = 8 mts effective span = 18 m, live load = IRC class AA. Use M_{20} grade of concrete and Fe_{415} steel.

OR

6) a) Write a note on impact factor for bridges.

b) Explain in brief Pigeaud's method of determining BM in slabs.

UNIT - IV

7) Write a brief notes on the following terms:

a) Step by step procedure of pier design.

b) Step by step procedure of abutment design.

OR

8) Explain the following terms in brief:

a) Back file behind abutment and approach slab.

b) Explain the general features of abutments.

UNIT - V

9) a) Explain the various types of bearings in bridges.

b) Explain design principles of steel rocker bearing.

OR

10) a) What are the various forces acting on adjustments?

b) Explain the various types of wiring walls.

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(DCE 422)

B.Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Fourth Year Second Semester)

CIVIL ENGINEERING

Paper - II : Construction Management

Time : 3 Hours **Maximum Marks: 75**

Answer Question No.1 is compulsory ***(15)***

Answer ONE question from each unit ***(4×15 = 60)***

1) a) Write any two main causes of project failure.

b) What are the objectives of planning and scheduling?

c) List out the stages of planning in construction management.

d) Write any one difference between bar chart and mile stone chart.

e) What is an event?

f) List out any four steps involved in optimization of cost.

g) Define semicritical path.

h) What is stores management?

i) Define resource smoothing.

j) What is probabilistic time.

k) What is main purpose of documentation?

l) What is the meaning of business cycle?

m) Define Benefit Cost ratio.

n) Why time and motion study is necessary in resource management?

o) Write any two differences between direct cost and indirect cost.

UNIT - I

2) a) Discuss in brief the role of management in project execution.

b) Explain in brief the difference between PERT and CPM networks. Explain the circumstances under which one is preferred over the other.

OR

3) For the construction of a guesthouse, certain activities are to be performed which are as given below.

Activity No.	1	2	3	4	5	6	7
Duration (in weeks)	2	3	5	4	2	3	5

Activities 2 and 3 can be performed simultaneously and can start only when activity 1 is completed. Activity 4 can start only after activity 2 ends. Activity 5 cannot begin until activities 2 and 3 are completed. Activity 6 can start only after activities 4 and 5 are complete. Activity 7 is the last activity and this can commence only after the completion of activity 5.

a) Prepare a bar chart for the project.

b) What is the total time taken for the completion of the project.

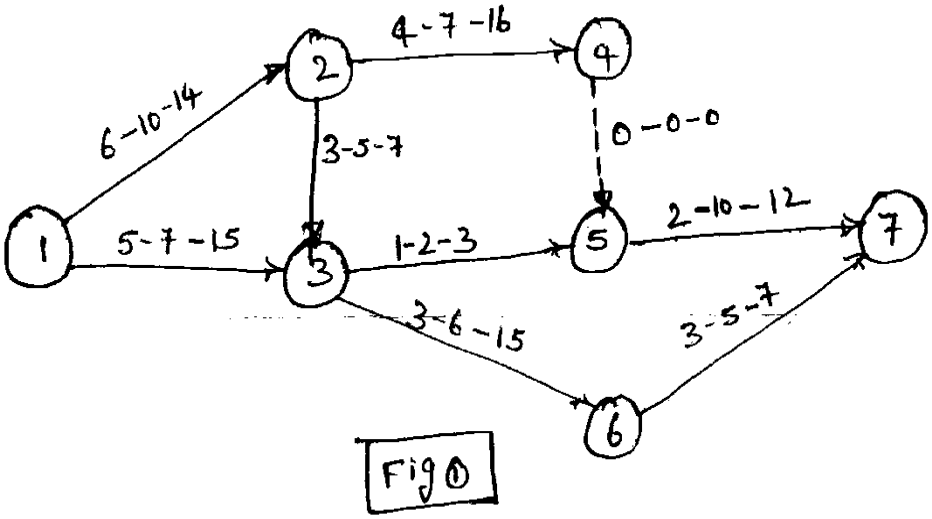
UNIT - II

4) a) What do you understand by work breakdown structure? What is its importance in network planning?

b) Explain in brief dummy activities. What are redundant-dummy activities? Explain with the help of illustrations.

OR

5) The network for a certain project is shown in Fig. 1. Determine the expected time for each path. Which path is critical?



Fig①

UNIT - III

6) a) Write a brief note on resource allocation and scheduling in projects of long duration.

b) Write an explanatory note on multi-project-multi-resource-allocation.

OR

7) a) Discuss the different types of layout for stores management.

b) Explain the main considerations necessary in the storing and stacking of civil engineering materials.

UNIT - IV

8) a) Discuss the different factors leading to accidents in construction projects.

b) What are the different approaches to safety in construction? Explain the salient features of each type of approach.

OR

9) a) Explain the construction procedure for the following charts:

i) P-chart.

ii) C-chart.

b) What do you understand by "break even analysis" and explain its salient features and limitations?

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(DCE 423)

B.Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Fourth Year Second Semester)

CIVIL ENGINEERING

Paper - III : Transportation Engg-II

Time : 3 Hours **Maximum Marks: 75**

Answer Question No.1 is compulsory ***(15)***

Answer ONE question from each unit ***(4×15 = 60)***

1) a) Write any two objects of signalling.

b) What is the various types of signals?

c) Write a short note on crossing.

d) Differentiate between square joint and staggered joint.

e) Write any two functions of Ballast.

f) Write requirements of ideal joints (any two).

g) What is rising and Falling Gradient.

h) Write a short note on Airport marking.

i) Define Locomotive yard.

j) Define goods yard.

k) Differenciate between station and yard.

l) Classify any two airport obstructions.

m) Define Apron.

n) Give an example of pier structures.

o) What is mean by Runway?

UNIT - I

2) a) Write a short note on role of Railways in transportation.

b) What are the requirements of good track?

c) What are the purposes and advantages of welding of rails?

OR

3) a) Compare the characteristics of timber sleepers and reinforced concrete sleepers.

b) What are the requirements of Elastic Fastenings? Briefly describe the various Elastic Fastenings used on Indian Railways.

UNIT - II

4) Find out gradient for a broad gauge track where the grade resistance together with curve resistance due to a 2° curve. Is equal to the resistance due to a rolling gradient of 1 in 200.

OR

5) What do you understand by the geometric design of track? Enumerate the parameters which affect the geometrical design.

UNIT - III

6) Discuss the recommended parameters in respect for the design of flexible and rigid pavements.

OR

7) Explain the procedure to be adopted for planning an airport drainage.

UNIT - IV

8) What are the types of water transportation system? Including its merits.

OR

9) a) Differenciate – between pier and wharf structures.

b) What is Harbour? How are harbours broadly classified?

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(DCE 424 B)

B.Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Fourth Year Second Semester)

CIVIL ENGINEERING

Paper - IV : Advanced Environmental Engineering

Time : 3 Hours **Maximum Marks: 75**

Answer Question No.1 is compulsory ***(15)***

Answer ONE question from each unit ***(4×15 = 60)***

1) Explain the following briefly:

a) Self-purification of a stream.

b) Flora and Fauna in natural streams.

c) Aerated lagoons.

d) Food to micro organisms ratio.

e) Sources of waste water from sugarmills.

f) Quantity of liquid waste from pulp and paper industry on the basis unit production of paper.

g) Primary and secondary air pollutants with examples.

h) Effect of Cl_2 on plants.

i) Thermal inversion.

j) Wind rose.

k) Principle of condensation of air pollutants.

l) Absorption of gaseous pollutants.

m) Effects of noise on human health.

n) Noise rating system.

o) Smoke.

UNIT - I

2) Discuss in detail the impact of raw municipal sewage pollution on stream and its eco-system.

OR

3) a) Distinguish between conventional activated sludge process and extended aeration system.

b) Design an oxidation pond (facultative type) for a population of 20,000 at latitude 16°N. Assume rate of water supply as 135 lpcd.

UNIT - II

4) a) What are the characteristics of pulp and paper mill waste water?

b) What are the various treatment methods available for sugar mill waste water? Explain briefly by means of flow diagrams the treatment process.

OR

5) a) Show the sources of waste water generations with the help of a flow diagram. Mention the characteristics of waste water from each source.

b) Explain briefly how dairy waste water are treated.

UNIT - III

6) a) With the help of neat process flow diagram, explain how nitrogen is removed biologically.

b) What are the various approaches generally followed for the removal of phosphorus from sewage? Explain briefly.

OR

7) What are the effects of air pollution on human health and materials of property?

UNIT - IV

8) Explain the various air pollution control equipment available for particulate removal. Briefly describe their principle of operation.

OR

9) a) What are the prevention and control measures available for noise pollution?

b) Calculate the "L_{eq}" over an eight-hour day for a worker exposed to the following levels and duration.

dB(A)	94	89	98	83
Duration (hours)	3	2	0.5	2.5

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(DCE 424 F)

B.Tech. DEGREE EXAMINATION, DECEMBER – 2015

(Examination at the end of Fourth Year Second Semester)

CIVIL ENGINEERING

Paper - IV : Remote Sensing and Photo Interpretion

Time : 3 Hours **Maximum Marks: 75**

Answer Question No.1 is compulsory ***(15)***

Answer ONE question from each unit ***(4×15 = 60)***

1) a) What do you understand by remote sensing?

b) Write any two advantages of remote sensing.

c) What is impotence of transmittance in remote sensing?

d) Define active remote sensing.

e) Define nominal spectral resolution.

f) Write the difference between Nadir and Swath.

g) What is the impotence of point positioning in GIS?

h) Define principal length in case of photogrammetry.

i) What is the importence of spectral subsetting in case of digital image processing?

j) What is image index?

k) What is spatial frequency in case of digital image processing.

l) What do you mean by multiresolution in case of Data Integration, analysis and presentation?

m) What do you mean by land-use and land-cover?

n) Define GIS.

o) What do you mean by Geoinformatics?

UNIT - I

2) a) Explain in detail about remote sensing system with a neat sketch.

b) Explain the impotence of remote sensing in real world phenomenon.

OR

3) a) What is orbit of a satellite? Explain geo synchronous and sun-synchronous orbits.

b) Briefly describe the improvements made fill date in IRS satellite systems.

UNIT - II

4) What is film resolution and ground resolution distance? Calculate ground resolution distance for a photograph having 1:25,000 scale and 50 line pairs/mm film resolution.

OR

5) a) Explain along track scanning in remote sensing.

b) Explain Whiskbroom scanning. Give examples of such sensors.

UNIT - III

6) a) Explain applications of remote sensing in hydrological science.

b) Explain the application of remote sensing in ocean and coastal monitoring.

OR

7) a) How would you use GIS is water resource management?

b) Explain in detail about surface water mapping and inventory.

UNIT - IV

8) a) How would you use GIS in inland water quality survey?

b) Explain about bathymetry and how to estimate water depths using GIS.

OR

9) a) Write the types of output products in GIS.

b) Explain in detail about spatial data.

c) Write about manual digitizing.

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