3E1625

3E1625

B. Tech III Sem. (Main/Back) Exam. Jan. 2016
Civil Engineering
3CE5A Fluid Mechanics

Time: 3 Hours   **Maximum Marks: 80**
                                                     Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

UNIT-I

Q.1 (a) Enunciate Newton's law of viscosity. Explain the importance of viscosity in fluid motion. What is effect of temperature on viscosity of water and air?   [8]

(b) The velocity distribution for flow over a flat plate is given by -

$u = \dfrac{3}{4} y^2 - y^{3/2}$, where 'u' is the point velocity in m/sec at a distance y meter above the plate. Determine the shear stress at $y = 20cm$, assume dynamic viscosity as 8 poise.   [8]

OR

Q.1 (a) Explain the phenomenon of capillarity. Obtain an expression of capillary rise. [8]

(b) Surface tension of water in contact with air is given by 0.0725 N/m. The pressure outside the droplet of water of diameter 0.02mm is $10.32N/cm^2$. Calculate the pressure within the droplet of water.   [8]

UNIT-II

Q.2 (a) Define pressure. Obtain an expression for the pressure intensity at a point in a fluid. Stall and prove Pascal's law. [8]

(b) A rectangular plane surface 1m wide and 3m deep lies in water in such a way that its plane makes an angle of 30° with the free surface of water. Determine the total pressure and position of centre of pressure when the upper edge of plate is 2m below the free surface of water. [8]

OR

Q.2 (a) Prove that the distance between the meta centre and centre of buoyancy is given by $\frac{I}{V_s}$ where I is moment of Inertia of the plan of the floating body at water surface about longitudinal axis and V_S is volume of the body submerged in liquid. [8]

(b) A wooden cylinder of specific gravity 0.6 and circular in cross-section is required to float in oil of specific grainy 0.8. Find the length to diameter ratio for the cylinder to float with its longitudinal axis vertical in oil. [8]

UNIT-III

Q.3 (a) Differentiate between following-

    (i) Uniform and non Uniform flow [2]

    (ii) Compressible and Incompressible flow [2]

    (iii) Steady and unsteady flow [2]

    (iv) Rotational and irrotational flow [2]

(b) The velocity vector in a fluid flow is given by-

$v = 2x^3 \hat{i} - 5x^2y \hat{j} + 4t \hat{k}$. Find the velocity and acceleration of a fluid particle at (1, 2, 3) at time t = 2 sec. [8]

OR

Q.3 (a) What are the different forces present in fluid flow. For the Euler's equation of motion, which forces are taken into consideration? Derive Euler's equation. [8]

(b) Do the following velocity components represent physically possible flow?

$$u = x^2 + z^2 + 10, \quad v = y^2 + z^2 + 5, \quad w = 9xyz$$ [8]

UNIT-IV

Q.4 (a) State the momentum equation. How will you apply momentum equation for determining the force exerted by a flowing liquid on a pipe bend. [8]

(b) The maximum flow through a 300mm diameter horizontal main pipe line is 18200 lit/minute. A venturimeter is introduced at a point of the pipe line where the pressure head is 4.6m of water. Find the smallest diameter of throat so that the pressure at the throat is never negative. Assume $C_d = 1$ [8]

OR

Q.4 (a) What is Cipolletti's weir? Prove that the discharge through Cipolletti's weir is given by-

$$Q = \frac{2}{3} Cd\, L \sqrt{2g}\ H^{3/2}\ , \text{where -}$$

L = length of weir, H = head of water over weir [8]

(b) Find the discharge of triangular notch of angle 60° when the head over the triangular notch is 0.20m. Take Cd = 0.6. [8]

UNIT-V

Q.5 (a) Find out the ratio of maximum velocity to average velocity for viscous flow of fluid through circular pipe. [8]

(b) An oil of sp. gravity 0.9 and viscosity 0.06 poise is flowing through a pipe of diameter 200mm at the rate of 600 lit/sec. Find the head lost due to friction for a 500m length of pipe. Find the power required to maintain this flow. [8]

OR

Q.5 (a) Derive an expression for the loss of head due to sudden enlargement and sudden contraction of a pipe. [8]

(b) Two tanks are connected with the help of two pipes in series. The length of the pipes are 1000m and 800m whereas the diameters are 400mm and 200mm respectively. The coefficient of friction for both pipes is 0.008. The difference in water level in the two tanks is 15m. Find the rate of flow of water through pipes, considering all losses. [8]

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B. Tech III Sem. (Main/Back) Exam. Jan. 2016
Civil Engineering
3CE6A Advanced Engineering Mathematics

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL _____

2. NIL _____

UNIT-I

Q.1 (a) Find the Fourier series to represent the function -

f(x) = x sin x, $-\pi \le x \le \pi$,

hence deduce that $\dfrac{\pi}{4} = \dfrac{1}{2} + \dfrac{1}{1.3} - \dfrac{1}{3.5} + \ldots\ldots$ [8]

(b) Obtain the first three cosine terms and the constant term in the Fourier series for [8]
y, where -

x :	0	1	2	3	4	5
y:	4	8	15	7	6	2

OR

Q.1 (a) Find the Fourier seines for -

f(x) = x + x², $-\pi < x < \pi$.

hence show that $\dfrac{\pi^2}{6} = 1 + \dfrac{1}{2^2} + \dfrac{1}{3^2} + \ldots\ldots$ [8]

(b) Find $Z^{-1}\left[\dfrac{1}{(z-2)(z-3)}\right]$,

if -

[8]

(i) • $|z| < 2$,

(ii) $2 < |z| < 3$,

(iii) $|z| > 3$

UNIT-II

Q.2 (a) Apply the convolution theorem to obtain -

[8]

$$L^{-1}\left\{\dfrac{s}{(s^2+a^2)^2}\right\}$$

(b) Use Laplace transform technique to solve:

$(D^2+1)\,x = t\cos 2t, \quad x(0) = x^1(0) = 0.$

[8]

OR

Q.2 (a) Find the Laplace transform of the function -

(i) $f(t) = \begin{cases} t/T & , & 0 < t < T \\ 1 & , & t > T \end{cases}$

[4]

(ii) $f(t) = \begin{cases} \sin(t - \pi/3) & , & t > \pi/3 \\ 0 & , & t < \pi/3 \end{cases}$

[4]

(b) Find the bounded solution $y(x, t),\ 0 < x < 1,\ t > 0$

of the boundary value problem

$$\dfrac{\partial y}{\partial x} - \dfrac{\partial y}{\partial t} = 1 - e^{-t},\quad y(x,0) = x$$

[8]

UNIT-III

Q.3 (a) Find the Fourier transform of - [5+3=8]

$$f(x) = \begin{cases} x^2, & \text{for } |x| \le a \\ 0, & \text{for } |x| > a \end{cases}$$

Hence evaluate

$$\int_0^\infty \cos\left(\frac{as}{2}\right) \frac{(a^2 s^2 - 2)\sin as + 2as \cos as}{s^3} ds$$

(b) Express the function $f(x) = \begin{cases} 1, & \text{for } |x| \le 1 \\ 0, & \text{for } |x| > 1 \end{cases}$ [5+2+1=8]

as a Fourier integral. Hence evaluate -

$$\int_0^\infty \frac{\sin \lambda}{\lambda} \cos \lambda x \, d\lambda. \quad \text{Also deduce the value of} \int_0^\infty \frac{\sin x}{x} dx.$$

OR

Q.3 (a) Find the Fourier sine and cosine transform of - [4+4=8]

$$f(x) = \begin{cases} x, & \text{for } 0 < x \le 1 \\ 2 - x, & \text{for } 1 < x < 2 \\ 0, & \text{for } x \ge 2 \end{cases}$$

(b) Solve: $\dfrac{\partial u}{\partial t} = \dfrac{\partial^2 u}{\partial x^2}$, given that $u_x(0, t) = 0$ [8]

and $u(x,0) = \begin{cases} x, & 0 \le x \le 1 \\ 0, & x > 1, \end{cases}$

$u(x, t)$ is bounded and $x > 0, t > 0$

UNIT-IV

Q.4 (a) Prove that-

(i) $E = 1 + \dfrac{\delta^2}{2} + \delta \sqrt{1 + \dfrac{\delta^2}{4}}$ [4]

(ii) $u_1 x + u_2 x^2 + u_3 x^3 + \ldots\ldots = \dfrac{x}{1-x} u_1 + \left(\dfrac{x}{1-x}\right)^2 \Delta u_1 + \left(\dfrac{x}{1-x}\right)^3 \Delta^2 u_1 + \ldots$ [4]

(b) From the following table [8]

x	:	1.0	1.2	1.4	1.6	1.8	2.0
f (x)	:	0.0000	0.1280	0.5440	1.2960	2.4320	4.0000

Find f (1.25) and f^1(1.8)

OR

Q.4 (a) Use Simpson's $\frac{1}{3}$ and $\frac{3}{8}$ rule to evaluate $\int_0^{\pi/2} \sqrt{\cos x}\, dx$ [8]

(b) Apply Sterling's formula to find u_{32}, form the following data: [8]

$u_{20} = 14.035$, $u_{25} = 13.674$, $u_{30} = 13.257$

$u_{35} = 12.734$, $u_{40} = 12.089$, $u_{45} = 11.309$

UNIT-V

Q.5 (a) Use Picardis method of successive approximation to solve $\frac{dy}{dx} = x + y$, with the initial conditions y = 1 when x = 0. Compute y when x = 0.1 & x = 0.2 using three iteration. Check the result with the exact value. [8]

(b) Use Milne's Predictor and Corrector formula to calculate another step in the solution of the eq^n. $\frac{dy}{dx} = x - y^2$,

given the starting values [8]

x:	0	0.2	0.4	0.6
y:	0.0000	0.0200	0.0795	0.1762

OR

Q.5 (a) Use Euler's modified method to solve [8]

$\frac{dy}{dx} = x + y^2$ with y = 1 at x = 0.

Find an approximate value of y at x = 0.2 by taking h = 0.1.

(b) Given $\frac{dy}{dx} = x^2 + y^2$, y = 1.5, x = 1. [8]

Use Runge – Kutta method of fourth order, find approximate value of y when x = 1.2 in steps of 0.1.

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Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculate must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

UNIT-I

Q.1 (a)   Define the following: [6]

    (i)   Temperature stresses in composite bar
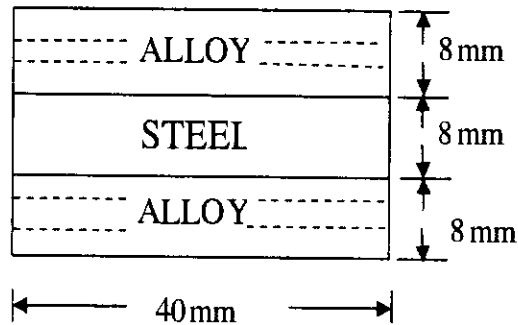
    (ii)   Modulus of rigidity

    (iii) Poisson's ratio

   (b)   A compound bar is made by fastening one flat bar of steel between two similar bars of aluminum alloy. The dimensions of each are 40 mm wide × 8 mm thick. If E for steel = 2.04×10^5 N/mm² and E for alloy = 0.612×10^5 N/mm², find the

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apparent value of E for the composite bar loaded in tension. If the respective elastic limits are 230 N/mm2 and 50 N/mm2, find the elastic limit of the compound bar. [10]


OR

Q.1 (a) Define the following terms: [8]

(i) Yield strength

(ii) Strain hardening

(iii) Proof stress

(iv) Limit of proportionality

(b) The modulus of rigidity for a material is 0.5×10^5 N/mm^2. A 12 mm diameter rod of the material was subjected to an axial Pull of 14 KN and the change in diameter was observed to be 4.8×10^{-3} mm. Calculate Poisson's ratio and the modulus of elasticity. [8]

UNIT-II

Q.2 (a) Explain the state of simple shear. [4]

(b) Draw Mohr's stress circle for direct stresses of 45 N/mm^2 (tensile) and 25 N/mm^2 (comp.) and find the magnitude and direction of resultant stresses on planes making angles of 30^0 and 60^0 with the plane of first principal stresses. Also, find the normal and tangential stresses on these planes. [12]

OR

Q.2 (a) Explain the polar moment of Inertia. [4]

(b) Determine centroidal moments of Inertia for a channel section shown in figure. [8]
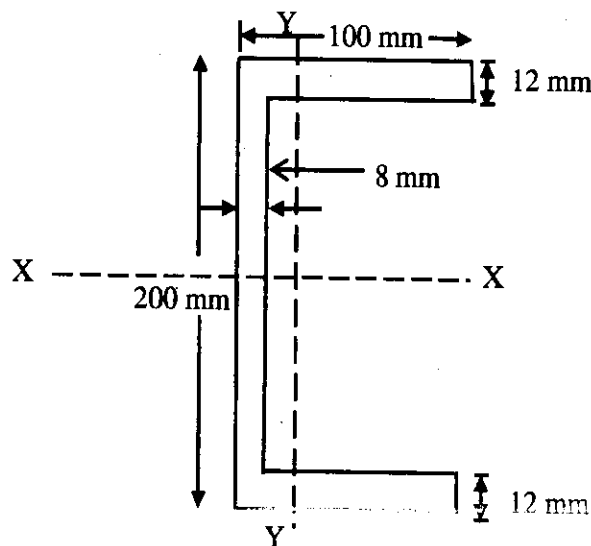
(c) Explain the following two - [4]

(i) Product moment of inertia

(ii) Principal planes and principal stresses.

UNIT-III

Q.3 (a) Define slenderness ratio and concept of effective length of a column for different end conditions. [8]

(b) Using Euler's formula, calculate the critical stresses for a column having slenderness ratio 120 under the following conditions - [8]

(i) Both ends hinged

(ii) Both ends fixed

Take $E = 2 \times 10^5$ N/mm^2

OR

Q.3 (a) A seamless spherical shell is of 0.8m internal diameter and 4mm thickness. It is filled with fluid under pressure until its volume increases by 50 cubic centimeters. Determine the fluid pressure, taking $E = 2 \times 10^5$ N/mm^2 and Poisson's ratio = 0.3. [6]

(b) A cylindrical shell 2m long and 90cm internal diameter and 10mm metal thickness is subjected to an internal pressure of 1.65N/mm^2. Determine - [10]

(i) Maximum intensity of shear stress

(ii) Changes in the dimensions of the shell

Take $E = 2 \times 10^5$ N/mm^2 and $\dfrac{1}{m} = 0.3$

UNIT-IV

Q.4 (a) Draw the Shear Forced and Bending Moment diagrams for the beam shown in figure. [8]
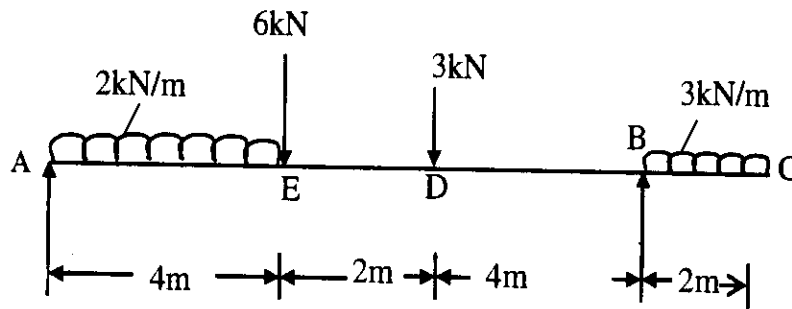
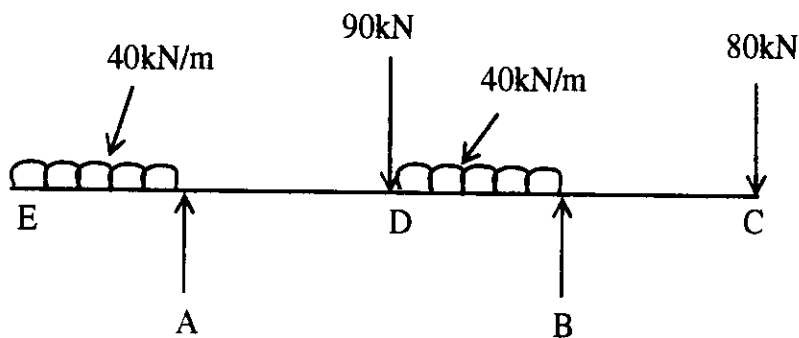(b) For the simply supported beam PQ, shown in figure, draw the S.F. & B.M.

diagrams. [8]
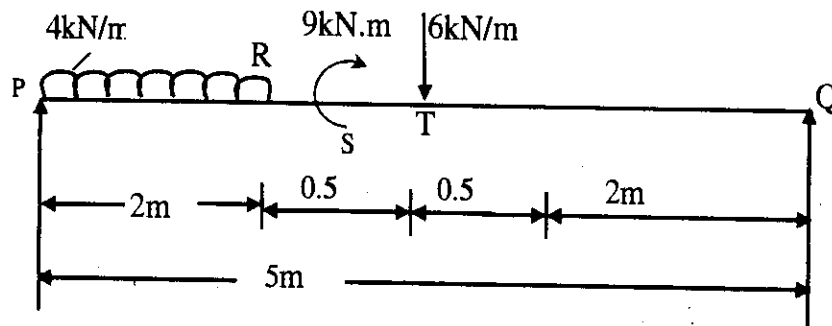
OR

Q.4 (a) Define briefly -   [6]

   (i) Shear Force

   (ii) Bending Moment

   (iii) Point of contra flexure

   (iv) Different types of supports

(b) Draw S.F. and B.M. diagrams for a beam as shown in figure.   [10]

UNIT-V

Q.5 (a) Explain assumptions made in theory of simple bending.   [4]

(b) A simply supported beam of rectangular cross section of dimension 150×300 mm is having span of 4.5m. It is loaded with u.d.l. of 8KN-m. Compute -   [12]

   (i) Shear stress developed on a layer 60mm above the natural axis of a section located at 1.5m from the left support.

   (ii) Maximum shear stress on the support at neutral axis.

OR

Q.5 (a) Define section modulus of a beam section and derive the equation for simple theory of bending. [6]

(b) Two rectangular bars, one of brass and other of steel, each of 80mm×20mm are placed together, to form a beam of 80mm wide and 40mm deep, on two supports 2 m apart, the brass being on the top of steel. Determine the maximum central load which can be applied to the beam if the bars are firmly secured to each other throughout their length. Take the following values - [10]

$E_S = 2×10^5 \ N/mm^2$, f_S, max $= 120 N/mm^2$

$E_b = 0.8×10^5 \ N/mm^2$, f_b, max $= 75 N/mm^2$

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3E1622

B. Tech III Sem. (Main/Back) Exam. Jan. 2016
Civil Engineering
3CE2A Civil Engineering Materials

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

UNIT-I

Q.1 (a) Explain dressing of stones.   [8]

   (b) Write about properties and uses of common building stones.   [8]

OR

Q.1 (a) Explain various tests on stones.   [8]

   (b) Write about sources and types of stones.   [8]

UNIT-II

Q.2 (a) Discuss Bull Trench and Hoffman's Kiln for burning of bricks.   [8]

   (b) Write in detail about Moulding and Drying of bricks.   [8]

OR

Q.2 (a) Discuss use of fly ash in manufacturing of bricks and cement. [8]

(b) Write about testing of Bricks and Tiles. [8]

UNIT-III

Q.3 Discuss in details about manufacturing process of cement with figure. [16]

OR

Q.3 (a) Discuss the setting time tests on cement. [8]

(b) Write about use of lime in construction. [8]

UNIT-IV

Q.4 (a) Discuss various types of pointing with figure. [8]

(b) Write about method of seasoning of wood. [8]

OR

Q.4 (a) Explain bulking of sand. Write about different types of sand. [8]

(b) Discuss properties of mild steel and HYSD steel. [8]

UNIT-V

Q.5 (a) Discuss concept of Embodied energy. [8]

(b) Write about types and uses of gloss. [8]

OR

Q.5 (a) Write about blast furnace slag and silica fume. [8]

(b) Discuss use of aluminum and G.I. in construction. [8]

3E1452

B. Tech III Sem. (Back) Exam. Jan. 2016
Civil Engineering
3CE2 (O) Building Material & Construction

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 24

Instructions to Candidates:

Attempt any **five questions**, selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

UNIT-I

Q.1 (a) Explain durability and impact values tests on stones.   [8]

   (b) Explain different methods of stone dressing.   [8]

OR

Q.1 (a) Explain various tests to be conducted on bricks as per BIS specifications.   [8]

   (b) Explain different types of tiles with neat sketches.   [8]

UNIT-II

Q.2 (a) Write about different constituents of cement & their role.   [8]

   (b) Explain the soundness test & setting time test on cement with neat sketch. [8]

OR

Q.2 Explain the classification & manufacturing process of lime.   [16]

UNIT-III

Q.3 (a) Explain various methods of seasoning of wood.

(b) Write about types & use of plastics.   [8]

[8]

OR

Q.3 (a) Write about different types of glass & their use.

(b) Write about various types of paints & varnishes.   [8]

[8]

UNIT-IV

Q.4 (a) Write about the different components of building and their functions.   [8]

(b) Discuss the various causes of failure of foundation & remedial measures.   [8]

OR

Q.4 Discuss various types of foundations, with neat sketches in detail.   [16]

UNIT-V

Q.5 (a) Explain different types of Bond in Brick work with neat sketches.

(b) Explain various types of plastering & pointing.   [8]

[8]

OR

Q.5 (a) Write the principles of stone masonry construction.

(b) Write about various types of Ashler stone masonry.   [8]

[8]

Roll No. _____

3E1623

Total No of Pages: 2

3E1623
B. Tech III Sem. (Main/Back) Exam. Jan. 2016
Civil Engineering
3CE3A Engineering Geology

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

UNIT-I

Q.1 (a) Draw and describe "Internal structure of the earth". [8]

(b) Write an essay on "Geology", highlighting the main subdivisions and the allied sciences. [8]

OR

Q.1 (a) Describe Geological work of river and various features form by erosion & deposition. [8]

(b) Write short note on -

(i) Spheroidal Weathering [4]

(ii) Types of Sand Dunes. [4]

UNIT-II

Q.2 (a) Describe formation of Sedimentary Rocks. [6]

(b) Describe Texture & Structure of Sedimentary Rocks. [10]

OR

Q.2 (a) Describe Texture & Structure of Igneous Rocks. [8]

(b) Describe various Forms of Igneous Rocks. [8]

UNIT-III

Q.3 (a) Write short note on Causes of Folding. [8]

(b) How do we recognize Fold in the field. [8]

OR

Q.3 A coal seam has True dip at a rate of lin 12 direction N60°W. It is derived to dips road in the seam at the rate of lin 30 and lin 40. In what direction these road should be driven? [16]

UNIT-IV

Q.4 Discuss different Geological factors that should be considered before selection of a dam site. [16]

OR

Q.4 Explain various types of Geophysical Prospecting methods. [16]

UNIT-V

Q.5 Write a short note on application of Remote Sensing in "Civil Engineering". [16]

OR

Q.5 Write short note on "Remote Sensing System". [16]

Instructions to Candidates:

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

UNIT-I

Q.1 (a) What is the role of approximations and round of errors in civil engineering? Explain.   [10]

(b) Explain truncation errors in detail.   [6]

OR

Q.1 (a) What is the requirement of determination of roots and polynomials and transcendental equations by bisections in computation of civil engineering applications?   [10]

(b) Give algorithm for Secant and Bairstow'w method.   [6]

UNIT-II

Q.2 (a) Explain successive substitution method with its derivation a algorithm.

(b) Write short note on linear algebraic equations.

OR

Q.2 (a) Derive and explain the formula for decomposition methods a algorithm.

(b) Explain various methods for the solutions of linear simultaneous l equations.

UNIT-III

Q.3 (a) Explain the role of curve fitting and numerical differentiatioı engineering applications implementation in detail.

(b) Write short note on non – linear Regression analysis and its applica

OR

Q.3 (a) Explain various existing applications of difference relations in t differential relations with appropriate example.

(b) What is the use of backward, forward and central differencı numerical differentiations?

UNIT-IV

Q.4 (a) Derive the expression for numerical integration using Simpson 1/8

(b) Give derivation for trapezoidal method for numerical integration aı curve.

OR

Q.4 Derive and explain the following.

(a) Newton's method for integration.

(b) Simpson's 3/8 method.

UNIT-V

Q.5 (a) Explain numerical solution of ordinary differential equation by modified Euler method along with its derivation. [8]

(b) Write a C program for Elliptic equation and explain. [8]

OR

Q.5 Explain Elliptic equation and parabolic equations and their solution techniques in detail. [16]

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3E1624

3E1624

B. Tech III Sem. (Main/Back) Exam. Jan. 2016
Civil Engineering
3CE4A Construction Technology

Time: 3 Hours   Maximum Marks: 80
    Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

UNIT-I

Q.1 (a) What are the requirements of building in its design and construction?   [8]

Discuss

(i) Day lighting and ventilation

(ii) Damp prevention

(b) State different structural components of a building. Discuss in brief about foundation and plinth.   [8]

OR

Q.1 (a) State and discuss different types of construction.   [10]

(b) Briefly explain the terms "foundations." Enumerate the various types of building foundations.   [6]

UNIT-II

Q.2 (a) What are different causes of dampness in building? What are ill effects of dampness? [8]

(b) Describe various methods of damp proofing. [8]

OR

Q.2 (a) Distinguish clearly between a lintel and an arch. Explain with sketches R.C.C. lintel. [8]

(b) State the circumstances under which you use: [8]

(i) Doglegged stair

(ii) Open newel stair

(iii) Spiral stair

(iv) Half turn geometrical stair.

UNIT-III

Q.3 (a) Explain fabrication of structural steel at slopes and sites. [8]

(b) State and discuss various precast systems based on load bearing structure. [8]

OR

Q.3 (a) State and discuss the factors that affect selection of flooring material. [8]

(b) What are the commonly used roof covering materials? Briefly explain tile roofing. [8]

UNIT-IV

Q.4 (a) State different types of earth moving equipments. Discuss working, output and uses of Bulldozer. Support your answer with sketch. [10]

(b) Discuss working of scraper. [6]

OR

Q.4 (a) State and discuss different methods of dewatering. [8]

(b) State different types of pumps. Discuss reciprocating pumps. [8]

UNIT-V

Q.5 (a) What do you understand by equipment management in construction project? State and discuss factors affecting selection of construction equipments.   [10]

   (b) State and discuss operating cost of construction equipment.   [6]

OR

Q.5 Determine the probable cost per hour of owning and operating power shovel. The details of the power shovel are as follows: [16]

   (a) Engine power = 160HP

   (b) Crank case capacity = 30 liters

   (c) Useful life = 8 years

   (d) Time between oil change = 150 hour

   (e) Shipping weight = 109 tonnes

   (f) Factory price of the equipment = ₹ 28 lacs.

   (g) Operating factor = 0.6

   (h) Freight charges = ₹ 60/tonne

   (i) Unloading and assembly charges = ₹ 1000

   (j) Hours used per cost = 4000 hours

   Assume investment cost = 15% of average cost

   Depreciation cost per year = 10% of factory cost.