Civil - 3rd. Sem

QP-2610

Total No. of Pages : 3

Seat No.

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Engineering Maths - III

Sub. Code: 63338/73197/77769

Day and Date: DECEMBER ,17-12-2024 **Total Marks:** 70

Time: 10:30 AM To 01:00 PM

Instructions: 1. Figures to the right indicate full marks

Special Inst.: 1) Attempt any three questions from each section.
2) Use of non-programmable calculator is allowed.

Q1) SECTION-I [12]

Solve the following.

a) Solve $\frac{d^3y}{dx^3} - 3\frac{d^2y}{dx^2} + 4y = e^{2x}$ [6]

b) Solve $\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 4y = x^2$ [6]

Q2) Solve the following. [11]

a) Find the directional derivative of $\phi = x^2 - y^2 - 2z^2$ at the point P (2,−1, 3) in the direction $\overrightarrow{PQ}$ where Q(5,6,4). [5]

b) Show that the vector field given by $\bar{F} = (6xy+z^3)i + (3x^2 - z)j + (3xz^2 - y)k$ is irrotational. Also find the scalar potential $\emptyset$ such that $\nabla\emptyset = F$ [6]

Q3) Solve the following. [11]

a) Fit a straight line to the following data. [5]

x	0	5	10	15	20	25
y	12	15	17	22	24	30

b) Find the line of regression of y on x for the following data. [6]

X	10	12	13	16	17	20	25
y	19	22	24	27	29	33	37

Q4) Attempt any two from the following. [12]

a) Solve $x^2\frac{d^2y}{dx^2} - 3x\frac{dy}{dx} + y = \frac{\sin(\log x)+1}{x}$ [6]

b) Find the angle between the normals to the surface $x^2y + 2xz = 4$ at (2,−2,3) and to $x^3 + y^2 + 3xyz = 3$ at (1, 2, −1) [6]

c) Fit a least square geometric curve $y = ax^b$ to the following data. [6]

x	1	2	3	4	5
y	0.5	2	4.5	8	12.5

2

Q5) SECTION-II [12]

Solve the following.

a) A random variable X has the following probability distribution function.

X	0	1	2	3	4	5	6	7
P(X)	0	c	2c	2c	3c	c^2	$2c^2$	$7c^2+c$

Find (i) Value of c (ii) P(X≥ 6) (iii) P(X< 6) [6]

b) If the probability that an individual suffers a bad reaction from a certain injection is 0.001, determine the probability that out of 2000 individuals

(i) Exactly 3; (ii) more than 2 individuals. [6]

Q6) **Solve the following.** [11]

a) Find the Laplace transform of $\cosh 2t \cdot \cos 2t$ [5]

b) Find inverse Laplace transform of $\frac{1}{(s-1)(s^2+4)}$ using Convolution theorem. [6]

Q7) **Solve the following.** [11]

a) Evaluate $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Trapezoidal rule by dividing the interval into 8 sub intervals. [5]

b) Evaluate $\int_0^{\pi/2} \sin x\, dx$ by Simpson's $(\frac{3}{8})^{rd}$ rule by dividing the interval into 6 sub intervals. [6]

Q8) **Attempt any two from the following.** [12]

a) An Aptitude Test for selecting engineers in an industry is conducted on 100 candidates. The average score is 42 and standard deviation is 24. Assuming normal distribution for the scores find:

i)The number of candidates whose score is more than 60.

ii)The number of candidates whose score lies between 30 and 60.

(Given: For S. N. V. z the area under normal curve from z= 0 to z= 0.5 is 0.1915 and from z = 0 to z = 0.75 is 0.2735) [6]

b) Use Laplace transform method to solve $\frac{d^2y}{dt^2} - 3\frac{dy}{dt} + 2y = 4e^{2t}$, when $y(0) = -3$ and $y'(0) = 5$ at $t = 0$. [6]

c) Evaluate $\int_0^1 \frac{dx}{1+x^2}$ using Weddle's rule by dividing the interval into 6 equal sub intervals. [6]

Seat No. CE- 3rd Sem 3

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Strength Of Material-I

Sub. Code: 63340/73199/77771

Day and Date: DECEMBER ,21-12-2024 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks
4. Use of Scientific calculator is allowed

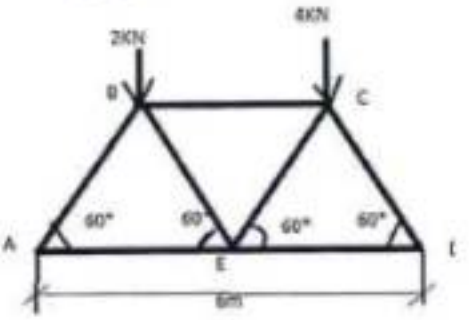
Special Inst.: Q1 and Q 5 are compulsory
Solve any two from Q2 to Q4 and Q6 to Q8 respectively

Q1) a) State and explain Hook's Law. **[9]**
b) Draw SFD and BMD for a cantilever beam AB 'L' subjected to a point load 'P' at free end.
c) Enlist types of trusses & explain one in detail with sketch.

Q2) A rectangular bar of50mm x 30mm x1m carries axial tensile force of 100KN in the direction of length . Modulus of elasticity is 200GPa. Find : i)Tensile stress. **[13]**
ii)Strain.
iii)Change in length.

Q3) Draw the shear force and bending moment diagram indicating principal values for an overhanging beam ABC with AB=6m and BC=3M . It is loaded with udl of intensity 2KN/m all over the span in addition to a point load 5KN at free end C. Also locate the point of contraflexure. **[13]**

Q4) Analyse the truss by using method of joint. **[13]**



Q5) a)State the shear stress formula and explain the meaning of different symbols employed, [9]

b) State assumptions made in theory of simple bending.

c)Define : i) Strain energy, ii) Modulus of resilance

Q6) An unsymmetrical cast iron beam has overall depth 300mm , top flange 150mm x 25mm , bottom flange 250mm x50mm and web thickness 25mm . The beam is 5m long and simply supported at ends. If permissible stresses are 100N/mm² in compression and 25N/mm² in tension. What uniformly distributed load beam will carry safely. [13]

Q7) Draw shear stress distribution on a T-section with web 150mm x 15mm deep and flange 200 mmx 20mm wide. The section is symmetric at vertical axis. The shear force applied is 110KN. [13]

Q8) Determine the instantaneous stress and deformation of a rod of length 1m and diameter 6mm , if a mass of 50kg falls through a height of 10cm and strikes the bottom of rod . The rod is freely suspended and fixed at the top. Assume E= 210GPa. [13]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.

1] (101) Bachelor of Engineering (63340) Strength Of Material-I Part 2 SEM 3

2] (101) Bachelor of Engineering (77771) Strength Of Material-I Part 2 SEM 3

3] (1154) B.Tech. CBCS (73199) Strength Of Material-I Part 2 SEM 3

Seat No. CE- 3rd Sem S

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Fluid Mech-I

Sub. Code: 63341/73200/77772

Day and Date: DECEMBER ,23-12-2024 **Total Marks:** 70

Time: 10:30 AM To 01:00 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Figures to the right indicate full marks

Special Inst.: Q4 and Q8 are compulsory
Attempt any three questions from each section

Q1) SOLVE THE FOLLOWING [11]

A. State Newtons Law of viscosity and Enlist Types of Fluid [5]

B. A plate having an area of 0.6 m^2 is sliding down the inclined plane at 30° to the horizontal with a velocity of 0.36 m/s. There is a cushion of fluid 1.8 mm thick between the plane and the plate. Find the viscosity of the fluid if the weight of the plate is 280 N. [6]

Q2) SOLVE THE FOLLOWING [12]

A. Derive formula for Total Pressure and Centre of Pressure for Plane vertical surface immersed into liquid [6]

B. A rectangular plate 3 meters long and 1 metre wide is immersed vertically in water in such a way that its 3 meters side is parallel to the water surface and is 1 metre below it. Find: (i) Total pressure on the plate, and (ii) Position of centre of pressure [6]

Q3) SOLVE THE FOLLOWING [11]

A. Define Stream lines, Streak Line, Path Line, Stream Tube, Equipotential lines [5]

B. Given that, [6]

$u = -4ax\,(x^2 - 3y^2)$

$v = 4ay\,(3x^2 - y^2)$

Examine whether these velocity components represent a physically possible two-dimensional flow; if so whether the flow is rotational or irrotational?

Q4) Write a short note on (Attempt Any Three) [12]

A. Surface Tension [4]

B. Metacentre and Metacentric Height [4]

C. Pressure Diagram [4]

D. Flow Net (Properties and Uses) [4]

E. Stability Conditions for floating object [4]

Q5) SOLVE THE FOLLOWING [11]

A. Write Bernoulli's Theorem assumptions [5]

B. A horizontal venturimeter with inlet diameter 200 mm and throat diameter 100 mm is employed to measure the flow of water. The reading of the differential manometer connected to the inlet is 180 mm of mercury. If the co-efficient of discharge is 0.98, determine the rate of flow. [6]

Q6) SOLVE THE FOLLOWING [12]

A. Explain Concept of Separation of Boundary Layer [6]

B. A smooth pipe 5 cm in diameter carries an oil of sp. Gravity 0.8 at velocity 0.25 m/s. Show that flow will be laminar and calculate loss of head per 10 m length of pipe . Take viscosity as 8 poise [6]

Q7) SOLVE THE FOLLOWING [11]

A. What do you mean by Pipes in Series and in Parallel [5]

B. Three pipes of diameters 300 mm, 200 mm and 400 mm and lengths 450 m, 255 m and 315 m respectively are connected in series. The difference in water surface levels in two tanks is 18 m. Determine the rate of flow of water if coefficients of friction are 0·0075, 0·0078 and 0·0072 respectively Neglecting minor losses. [6]

Q8) Write a short Note on (Attempt Any Three) [12]

A. Mouthpiece and Rotameter [4]

B. Laminar and Turbulant Flow [4]

C. Water Hammer [4]

D. Coontrol of Seperation of Boundary Layer [4]

E. Hydraulically Smooth and rough Boundaries [4]

QP-2782

Seat No. CE- 3rd Sem 7

Total No. of Pages : 2

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Building Constructions & Materials

Sub. Code: 63342/73201/77773

Day and Date: DECEMBER ,26-12-2024 **Total Marks: 70**

Time: 10:30 AM To 01:30 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks

Special Inst.: Section I: Solve any three questions.
Section II : Q.5 and Q.6 compulsory. Solve any one question from Q.7 & Q. 8

Q1) Section - I [11]

a) Explain use of Aluminium, Glass and Plastic in Construction industry. (6)

b) What are the requirements of good building stone? (5)

Q2) a) List the requirement of a building as a whole and explain any two in details. (6) [12]

b) Mention the situations in which the pile foundations are adopted and also list and explain the classification of pile foundations. (6)

Q3) a) Differentiate between English bond and Flemish bond with diagram. (6) [11]

b) Explain with sketch types of stone masonry. (5)

Q4) Write short note on: [12]

i) Composite Masonry

ii) Formwork

iii) Defects in Timber

Q5) **SECTION II** [12]

Draw sectional plan and Elevation for a T.W. Framed Paneled door with following data:

a) Clear opening : 1000 X 2100 mm :

b) frame size : 75 X 125 mm :

c) No of shutters : 2 Nos

d) No Panels : 4

Assume suitable data.

Q6) Design and draw the plan and sectional elevation of R.C.C. Dog legged stair case for Residential building for following data- [18]

a) Storey height -3.20 m

b) width of stair - 1.0m

Q7) What is necessity of lintel? [5]

Q8) What are the advantages of constructing steel roof trusses over timber trusses? [5]

QP-2655

Seat No. CE-3rd Sem B

Total No. of Pages : 2

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Surveying-I

Sub. Code: 63339/73198/77770

Day and Date: DECEMBER ,19-12-2024 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Figures to the right indicate full marks
3. Use of Scientific calculator is allowed

Special Inst.: Attempt any Three questions from question number 01 to question number 04
Attempt any Three questions from question number 05 to question number 08

Q1) a) Describe in detail two peg method of permanent adjustment of dumpy level (06) **[12]**
b) Explain characteristics of contour with neat sketch (06)

Q2) a) Explain mid ordinate rule for area calculation with neat sketch (05) **[11]**
b) Explain average ordinate rule for area calculation with neat sketch (06)

Q3) a) Explain principal of plane table and accessories in plane table survey (06) **[11]**
b) What are various errors and precautions in plane table survey (05)

Q4) Attempt any **three** questions from the following . **[12]**
a) Define contour line, and contour interval (04)
b) Explain temporary adjustments in plane table survey (04)
c) Explain temporary adjustment of level (04)
d) Explain area of zero circle (04)
e) Explain orientation by magnetic needle method (04)

Q5) a) What are uses of Vernier Thodolite (06) **[12]**
b) Explain various components of Vernier Theodolite (06)

Q6) a) **[11]**

LINE	LENGTH	BEARING
AB	100	?
BC	80.5	140°30′
CD	60	220°30′
DA	?	310°15′

An incomplete traverse table is obtained as above, Calculate the length of DA and bearing of AB (06)
b) Explain stepwise procedure for carrying out Theodolite traversing (05)

Q7) a) Explain usage of ghat tracer and box sextant (05) **[11]**

P.T.O.

b) Explain with neat sketch hand level and abney level (06)

Q8) Attempt any **three** from the following . [12]

a) Explain Bowditch rule (04)
b) Explain tunnel survey in detail (04)
c) Define Centring and define Transiting (04)
d) Explain hydrographic survey (04)
e) Explain sources of error in theodolite (04)

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
खालची प्रश्नपत्रिका खालील विषयांसाठी वितरित करता येईल.

1] (101) Bachelor of Engineering (77770) Surveying-I Part 2 SEM 3
2] (1154) B.Tech. CBCS (73198) Surveying-I Part 2 SEM 3
3] (101) Bachelor of Engineering (63339) Surveying-I Part 2 SEM 3

Seat No. CE- 4th - ID

QP-1229

Total No. of Pages : 3

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Concrete Technology

Sub. Code: 63346/79114/79402

Day and Date: NOVEMBER ,28-11-2024 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions: **1. All questions are compulsory**
2. Assume suitable data wherever necessary and mention it boldly
3. Figures to the right indicate full marks
4. Use of Scientific calculator is allowed

Q1) Attempt all questions. [12]

A. Explain the classification of aggregates. [6]

B. Explain the soundness test of cement. [6]

Q2) Attempt the following. [11]

A. Describe the various methods of mixing of concrete [6]

B. What are the factors affecting workability of concrete? [5]

Q3) Attempt any Two. [12]

A. What is creep and shrinkage of concrete? [6]

B. Explain the maturity concept of concrete. [6]

C. Explain in detail Schmidt's Rebound Hammer test on concrete. [6]

Q4) Attempt all questions. [15]

A. What are the factors affecting design of concrete mix. [5]

B.

Design of M20 concrete mix as per IS:10262-2009

1. Grade Designation: M20
2. Type of cement: OPC 43 grade confirming to IS 8112
3. Maximum nominal size of aggregate: 20 mm
4. Workability: 100 mm slump
5. Exposure condition: Mild for R.C.C.
6. Specific gravity of cement: 3.15
7. Specific gravity of coarse aggregates: 2.8
8. Specific gravity of fine aggregates: 2.7
9. Sieve analysis of fine aggregate: Confirming to Zone I of IS: 383

Table1 : Assumed Standard Deviation		
Sr. No.	Nominal size of Aggregate	Assumed standard deviation in N/mm²
1.	M 10	3.50
2.	M 15	
3.	M 20	4.00
4.	M 25	
5.	M 30	5.00
6.	M 35	
7.	M 40	
8.	M 45	
9.	M 50	

Table 2 : Maximum Water Content per Cubic Meter of Concrete for Nominal Maximum Size of Aggregate		
Sr. No.	Nominal Maximum Size of Aggregate	Maximum Water Content Kg
1	10	208
2	20	186
3	40	165

Table 3 : Volume of Coarse Aggregate per Unit Volume of Total Aggregate for Different Zones of Fine Aggregate					
Sr. No.	Nominal Maximum Size of Aggregate	Zone IV	Zone III	Zone II	Zone I
1	10	0.50	0.48	0.46	0.44
2	20	0.66	0.64	0.62	0.60
3	40	0.75	0.73	0.71	0.69

Table 5 : Maximum cement content, Maximum Water cementatio and Maximum grade of concrete for Different exposures with Normal Weight aggregates of 20 mm Nominal Maximum size							
		Plain Concrete			Reinforced concrete		
Sr. No	Exposure	Minimum Cement content Kg/m³	Maximum free Water-cement ratio	Minimum grade of concrete	Minimum Cement content Kg/m³	Maximum free water-cement ratio	Minimum grade of concrete
1	Mild	220	0.60	-	300	0.55	M20
2	Moderate	240	0.60	M15	300	0.50	M25
3	Severe	250	0.50	M20	320	0.45	M30
4	Very Severe	260	0.45	M20	340	0.45	M35
5	Extreme	280	0.40	M25	360	0.40	M40

12

Q5) Attempt any Two. [8]

A. Explain fly ash as an admixture in concrete. [4]

B. Write a short note on Silica Fume. [4]

C. Explain in detail the effect of super-plasticizer on concrete. [4]

Q6) Attempt any Two. [12]

A. Write short note on 1. Self-compacting concrete 2. High Performance concrete. [6]

B. Explain durability of concrete in Sea water. [6]

C. Explain the effect of permeability on concrete. [6]

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Seat No. CE- 4th Sem 13 Total No. of Pages : 2

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Structural Mechanics

Sub. Code: 79112

Day and Date: NOVEMBER ,26-11-2024 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions: **1. Assume suitable data wherever necessary and mention it boldly**
2. Figures to the right indicate full marks
3. Use of Scientific calculator is allowed

Special Inst.: **Questions One and Five are compulsory and solve any two questions from each Section. Section -I consists of Q.1 to Q.4 and Section -II consists of Q.5 to Q.8**

Q1) A) Define principal planes and principal stresses. 3 marks **[9]**
B) Establish the condition of no tension lor Rectangular section. 3 marks
C) Uses of Influence line diagram 3 marks

Q2) An element in a stressed material has a tensile stress of 400 MPa and compressive stress of 250 Mpa acting on two mutually perpendicular planes and equal shear stress of 80 MPa on those planes .Find principal stresses and the position of the principal planes. Find also maximum shear stresses. **[13]**

Q3) A masonry Chimney 20 m high, of uniform circular section 4.5 m external diameter and 2 m internal diameter is subjected to a horizontal wind pressure of 1.5 KN/m2 of projected area .Find the maximum and minimum stress intensities at the base, if the specific weight of masonry is 24 KN/m3.Take K=2/3 **[13]**

Q4) A beam ACB 10 m long is fixed at A and is simply supported at B and is provided with an internal hinge at C 5 m from A. Draw the ILD for the following **[13]**
1. B.M. at A
2.Reaction at B
3..Reaction at A

Q5) A) Write assumptions made in Euler's theory 3 marks **[9]**
B) Explain Macaulay's Method 3 marks
C) Assumptions made in Torsion Formula 3 marks

Q6) Compare the crippling loads given by Rankine's and Eulers formulae for tubular strut 2.25 m long having outer and inner diameters of 37.5 mm and 32.5 mm **[13]**

loaded through pin joint at both ends. Take yield stress as σc = 315N/mm2 and a= 1/7500. E= 200 GPa

Q7) Using moment area method, derive the expression for the slope and deflection of simply supported beam loaded with UDL over whole span. Assume uniform flexural rigidity EI. **[13]**

Q8) A hollow shaft of diameter ratio 3/8 is required to transmit 600 KW at 110 rpm. The maximum torque being 20% greater than mean. Shear stress is not exceeds 63 MPa and the twist in a length of 3 m not to exceed 1.4 degrees. Calculate external diameter of shaft which would satisfy these conditions. Take modulus of rigidity = 84 GPa **[13]**

* * *

Seat No. CE-4th Sem IS

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Fluid Mechanics-II

Sub. Code: 63347/79115/79403

Day and Date: NOVEMBER ,29-11-2024 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks

Special Inst.: Q4 and Q8 are compulsory
Attempt any TWO questions from Q1,Q2,Q3
Attempt any TWO questions from Q5,Q6,Q7

Q1) Solve the following [11]

A. Define the most economical channel section. State the Conditions for the most efficient Trapezoidal Section [5]

B. Design an economical Trapezoidal Channel section with side slopes 2H:1V , Bed slope 1:3600 to carry discharge of 5 m3/sec. Take n=0.02 [6]

Q2) Solve the following [12]

A. Explain Direct step method of GVF Computation [6]

B. A wide rectangular channel carries discharge of 1.2 m3 / s /m , laid on bed slope of 1 in 3600, Determine the slope of water surface of 1 m and mention the type of profile. Take n= 0.02 [6]

Q3) Solve the following [11]

A. Give the classification of hydraulic jump and their Froude Number [5]

B. Show that [6]

$$y_2 + y_1 = \frac{2q^2}{gy_1y_2}$$

Q4) Write a Note on (Attempt Any Three) [12]

A. Velocity Distribution in Open Channel Flow [4]

B. M2 and S3 GVF Profile [4]

C. Specific Energy Curve [4]

D. Hydraulic Jump as Energy Dissipator [4]

E. Factors affecting Mannings roughness coefficient (n) [4]

Q5) Solve the following [11]

A. Write advantages of Triangular weir over Rectangular weir [5]

B. A reservoir has a uniform cross-sectional area of 0.15 Km2 and is provided with a rectangular weir 5 m long, How long will it take for water at the sill to fall from 90 cm to 50 cm, Take Cd= 0.6 for the weir. [6]

Q6) Solve the following [12]

A. Derive the force exerted by a jet on series of flat plate mounted on periphery of a wheel [6]

B. A Jet of water 5cm Diameter having a velocity of 25 m/s striking normally on a flat plate, Determine the force and work done when . [6]
   1. The plate is stationary
   2. the plate moving with a velocity 5 m/s

Q7) Solve the following [11]

A. Give the Classifications of Turbines. [5]

B. What are the Major components of the HydroPower plant? Draw a typical layout of a Hydroelectric Power Plant. [6]

Q8) Write a note on (Attempt Any three) [12]

A. Types of Notches and Weirs [4]

B. Ventilation of Weir [4]

C. Priming of Centrifugal pump [4]

D. Draft tube and its functions [4]

E. NPSH [4]

* * *

QP-1415

Total No. of Pages : 3

Seat No. CE-4th Sem 17

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Building Design and Drawing

Sub. Code: 63348/79116/79404

Total Marks: 70

Day and Date: NOVEMBER ,30-11-2024

Time: 02:30 PM To 05:30 PM

Instructions:
1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks

Special Inst.:
1) Attempt any two questions from Que. 1, Que. 3 and Que. 4
2) Attempt any two questions from Que. 5, Que. 6 and Que.7
3) Que. 2 and Que. 8 are compulsory

Q1) Attempt all questions [7]

a. Explain the significance of Wind Diagram with neat sketch. [4]

OR

Explain principles of planning a building in detail (any four).

b. Explain factors affecting site selection of building. [3]

Q2) Attempt compulsory [21]

a. Design a G + 1 twin bungalow for two brothers (Consulting Architect & Civil engineer) having plot size 35m x 30m .Maximum width of plot facing on 9.0m wide road on North side. Design a single bungalow for following data : [21]

i. Office with toilet :1
ii. Living Room : 1
iii. Kitchen & Dinning : 1
iv. Store room : 1
v. Utility : 1
vi. Master Bed Room with attach toilet : 2 Nos
vii. Children Bed Room : 1
viii. Guest Bed Room : 1
ix. Staircase
x. Sanitary Block as per requirement

The necessary verandah, porch should be provided in the design.
Show North Direction
Draw with the scale 1:100

1. Draw detail plan of Ground Floor
2. Draw detail plan of First Floor
3. Draw Site plan
4. Give area statement

P.T.O.

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Q3) Attempt all questions [7]

a. Describe techniques used in low cost housing. [3]

b. Explain Green Building rating systems in India. [4]

OR

Explain types of maintenance job of a building.

Q4) Attempt all questions [7]

a. Write a note on " Aspect" as a principle of planning a building. [3]

b. Explain concept Repairs & Rehabilitation of structures. [4]

OR

Explain significance of sun diagram with neat sketch.

Q5) Attempt all questions [12]

a. Explain in detail various traps used in drainage system. [6]

b. Write in detail concept of Earthing. [6]

Q6) Attempt all questions [12]

a. What is the necessity of ventilation and what are the factors affecting on ventilation? [6]

b. State the necessity of air conditioning. Explain the components of A.C. [6]

Q7) Attempt all questions [12]

a. Enlist the various types of Paints and write its application methods. [6]

b. Enlist the various types of Pointing with sketches. [6]

Q8) Attempt compulsory [11]

a. Differentiate between summer and winter air conditioning. [3]

OR

What is Sound Insulation & give the advantages of sound insulation? [4]

b. Write a note on Defects in plastering. [4]

c. Write characteristics of Fire resisting materials.

* * *

QP-1015

Total No. of Pages : 2

Seat No. CE-4th Sem 20

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Surveying-II

Sub. Code: 63345/79113/79401

Total Marks: 70

Day and Date: NOVEMBER ,27-11-2024

Time: 02:30 PM To 05:00 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Figures to the right indicate full marks
3. Use of Scientific calculator is allowed

Special Inst.: Attempt any three questions from question number 01 to questoin nuber 04
Attempt any three questions from question number 05 to question number 08

Q1) a) Following observations were taken with Transit Theolite [12]

Inst.station	Staff station	Target	Vertical Angle	Staff Reading	Remark
O	A	Lower	+ 6°30'	0.950	R.L of instrument axis=300.00
		Upper	+ 6°30'	3.250	

Calculate the horizontal distance between the instrument station and staff , also the RL of station A. (06)

b) Derive expression for measurement of horizontal distance, vertical height & R.L. when the line of sight is horizontal and the staff is held vertical. (06)

Q2) a) Explain classification of triangulation system (05) [11]
b) Explain procedure and use of subtense bar with neat sketch (06)

Q3) a) Explain principal of EDM with neat sketch (05) [11]
b) Explain field applications of total station (06)

Q4) Attempt any three from the following [12]
a) Explain criteria for base line selection (04)
b) Explain principal of triangulation (04)
c) Explain Tangential method of techeometry (04)
d) Explain in brief auto reduction tacheometer. (04)

Q5) a) state and draw sketches of any four horizontal curves (04) [12]
b) Two tangents AB and BC intersect at B. Another line DE intersects AB and BC at D and E such that ∠ADE =150° and ∠DEC = 140°. The radius of the first curve is 200m and that of the second is 300m.The chainage of B is 950m. Let us calculate all data necessary for setting out compound curve. (08)

Q6) a) Differentiate between Terrestrial Photogrammetry and Aerial Photogrammetry [11]
(05)

P.T.O.

b) The scale of an aerial photograph is 1cm = 100m. Determine the number of photographs required to cover an area of 8 km x 12.5 km , if the longitudinal overlap is 60% and side overlap is 30%. (06)

Q7) a) Explain types of remote sensing (05)
b) Explain classification of GPS receivers (06) [11]

Q8) Attempt any three from the following [12]
a) Explain transition curve with neat sketch(04)
b) Explain scale of vertical photographs with neat sketch (04)
c) Explain applications of remote sensing in civil engineering (04)
d) Define degree of curve. What is relationship between degree of curve and radius. (04)

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QP-2540

Total No. of Pages : 2

Seat No. CE- 6th Sem 22

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Waste Management

Sub. Code: 80939/81006

Day and Date: DECEMBER ,16-12-2024

Time: 02:30 PM To 05:00 PM

Total Marks: 70

Instructions: 1. All questions are compulsory
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks

Q1) Attempt all the questions. [11]

a. Write down the properties of waste in detail. [5]

b. Explain the various acts and rules for waste in India. [6]

Q2) Attempt any two questions: [12]

a. Deanbe water quality standards in details. [6]

b. Explain with neat diagram Reverse Osmosis in detail . [6]

c. What is importance of the waste water treatment plant? [5]

Q3) Attempt any two questions. [12]

a. Define Neutralization process in detail. [6]

b. Draw flow diagram of Textile industry treatment plant and explain in it. [6]

c. What is importance of industrial waste water treatment plant? [6]

Q4) Attempt any two questions. [12]

a. Define transportation methods of the Muncipal waste.Explain any one in detail [6]

b. Explain disposal methods of the Biomedical waste.Explain any one in detail. [6]

c. Describe reuse of C& D waste. [6]

Q5) Attempt all the questions. [11]

a. Define classification of waste. [5]

b. Explain rules and regulations of Hazardous waste. [6]

P.T.O.

Q6) Attempt any two questions: [12]

a. Explain E-waste management rules 2016. [6]

b. Describe reuse and recycle of E-waste. [6]

c. Define Segregation of E-waste. [6]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांसाठी सिमीत करता येईल.

1] (101) Bachelor of Engineering (81006) Waste Management Part 3 SEM 5
2] (1154) B.Tech. CBCS (80939) Waste Management Part 3 SEM 5

SI-03

Total No. of Pages : 2

Seat No. CE-5th Sem 24

Oct.-Nov. 2024 Examination

T.Y. B. TECH C.B.C.S.

Geotechnical Engineering-1

Sub. Code : 80766

Day and Date : Wednesday, 11-12-2024 **Total Marks : 70**

Time : 02:30 pm to 05:30 pm

Instructions:

1. All questions are compulsory.
2. Assume suitable data wherever necessary and mentioned in boldly.
3. Figure to the right indicate full marks.

Special Inst.: Use of non-programmable calculator is allowed.

Q.1 Attempt any two questions: **(12)**

a) Explain IS classification system of soil. (06)

b) Define Atterberg's Consistency limit. (06)

c) Describe: 1) Void Ratio
2) Porosity
3) Air Content } (06)

Q.2 Attempt any two questions. **(12)**

a) Explain Flow net with it's characteristic. (06)

b) Define factors affecting on the permeability in detail. (06)

c) For a homogeneous earth dam of 52 mt height and 2 mt free board. The flow net has 2 mt free board. The flow net has 22 potential drops and 5 flow channels. Calculate the discharge per meter length of the dam. Given: K-22x 10.6 m/sec. (06)

Q.3 **Attempt all the questions:** (11)

a) Describe compaction and factors affecting to the compaction. (05)

b) Explain field compaction equipments with their suitability. (06)

Q.4 **Attempt all the questions.** (11)

a) Explain assumptions of the Boussinesq's solution theory. (05)

b) A concentrated load of 22.5 KN acts on the surface of homogenous soil mass large extent. Find the stress intensity.

a) at a depth of 15 mt directly under the load.

Use Boussinesq's Equation. (06)

Q.5 **Attempt any two questions.** (12)

a) Describe Mohr-Coulomb failure theory with thee failure envelopes.(06)

b) Explain Direct Shear test with neat sketch. (06)

c) Determine the shear strength of a soil sample tested by vane of dia. 75 mm and ht.75 mm. If the torque applied is 30Nm. (06)

Q.6 **Attempt any two questions:** (12)

a) Define Rankine's theory on Passive earth pressure of cohesionless soil. (06)

b) Explain coloumb's theory for earth pressure. (06)

c) What are the limiting values of the lateral earth pressure at a deapth of 3 meters in a uniform sand fill with a unit weight of 20 KN/M^2. And a friction angle of 35 °. The ground surface is level. (06)

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QP-2071

Total No. of Pages : 2

Seat No. CE-5th Sem 26

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Environmental Engineering-I

Sub. Code: 66237/80765/81002

Total Marks: 70

Day and Date: DECEMBER ,09-12-2024

Time: 02:30 PM To 05:00 PM

Instructions:
1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Draw neat labelled diagrams wherever necessary
4. Figures to the right indicate full marks

Q1) Attempt all questions. [12]

a. What are various types of demand of water for town with fig? Also mention the factors affecting water demand. [6]

b. Write a brief note on. [6]
   a. Infiltration Galleries
   b. MPN
   c. Common water born diseases

Q2) Attempt any Two. [12]

a. State the objectives of using coagulant aid. Enumerate the coagulant aids used in water treatment [6]

OR

Design a circular sedimentation tank filled with mechanical sludge removerfpr a water work which has to supply daily 4.2 million litres of water to the town. The detention period in the tank is 4.5 hours, and the depth of water is assumed as 3.3m.

b. Explain the principle and working of Tube settler. [6]

Q3) Attempt any Two. [11]

a. What is break point chlorination ? Explain with graph. [6]

b. Write a short note on. [5]
   1. The theory of filtration
   2. Reverse Osmosis

OR

Give the stoichiometric equations of the Lime-Soda softening process.

Q4) Attempt all questions. [12]

a. Give the advantages and disadvantages of cast-iron and R.C.C. pipes used for water supply scheme. [6]

P.T.O.

b. Write a short note on Thrust block design. [6]

Q5) Attempt any Two. [12]

1. A pipe network consist of following pipes [8]
Inflow at A is 1m3/s; while outflows at B, C & D are 0.3, 0.5 & 0.2m3/s. Find the corrected discharge in each pipe taking only one trial

Pipe	Length(m)	Diameter(mm)	Friction Factor	Flow(m^3/s)
AB	350	300	0.012	0.6
BC	300	250	0.010	0.3
AD	450	300	0.011	0.4
DC	500	250	0.012	0.2

2. What are basic functional and hydraulic requirements of a water distribution system. [4]

Q6) Attempt any Two. [11]

a. Sketch and explain:
i)Air relief valve ii)Non-return valve [6]

OR

Enumerate the methods of leakage detection in water distribution system.
Explain any one method.

b. Explain Concept of preparation of DPR. [5]

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Seat No. CE- 5th Sem 28

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Water Resource Engineering-I

Sub. Code: 66235/80763/81000

Day and Date: DECEMBER ,04-12-2024 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions:
1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks
4. Use of Scientific calculator is allowed

Special Inst.: Q4 and Q8 are compulsory. In section I Attempt any two questions from Q1,Q2 and Q3 and in section II attempt any two questions from Q5, Q6 & Q7

Q1) a) What is hydrological cycle ? Explain important phases of hydrological cycle ?(6) **[12]**
b) Explain in detail various methods adopted for computation of avarage rainfall over a basin ?(6)

Q2) a) What is Runoff ? Explain various types of runoff (5) **[11]**
b) The rate of rainfall for successive 30 min. periods of a 4h storm are as follows(6)
3.5, 6.5,8.5,7.8,6.4,4.0,4.0,5 cm/h.
Taking the value of Ø index as 4.5cm/h, compute the following
a. Total rainfall
b. Total rainfall excess
c. W index

Q3) a) What is Unit Hydrograp ? State Assumptions made in Unit Hydrograph analysis ?(5) **[11]**
b)
(6)
The ordinates of 6 H unit hydrograph are given, calculate ordinates of 9 hours unit hydrograph

Time(h)	0	03	06	09	12	15	18	21	24	27	30	33	36	39	42
Ordinates (Cumecs)	0	9	20	35	49	43	35	28	22	17	12	9	6	3	0

Q4) Write short notes:(Solve any two) **[12]**
a) Types of Precipitation (6)
b) Measurment of Infiltration(6)
c) S-Curve Hydrograph (6)

Q5) a) Explain with neat sketch Occurrence, Distribution, and classification of ground water (5) **[11]**
b) Derive the equation for discharge well penetrating through a confined aquifer(6)

Q6) a) Define Irrigation ? Explain benifits of irrigation in India ?(5)
b) Explain various surface methods of applying water to the crops ? (7) [12]

Q7) a) Define duty ? Explain various factors affecting duty ? (4)
b) The base period, intensity of irrigation and duty of various crops under a canal system are given in the table below. Find the reservoir capacity if the canal losses are 20% and reservoir losses are 12% (7) [11]

Crop	Base Period (days)	Duty at the Field (hectare/cumecs)	Area under the crop (hectare)
Wheat	120	1800	4800
Sugar-cane	360	800	5600
Cotton	200	1400	2400
Rice	120	900	3200
vegetables	120	700	1400

Q8) Write Short Notes On: (Solve any two) [12]
a) Crop Seasons and Indian Crops (6)
b) Percolation Tank (6)
c) Irrigation Efficiencies (6)

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QP-1942

Total No. of Pages : 2

Seat No. CE- 5th Sem 30

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Design of Steel Structures

Sub. Code: 66236/80764/81001

Total Marks: 70

Day and Date: DECEMBER ,06-12-2024

Time: 02:30 PM To 05:00 PM

Instructions:
1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks
4. Use of Scientific calculator is allowed

Special Inst.: IS 800-2007 and steel table is allowed in Examination
Question 1and 5 is compulsory, solve any two from Q2,Q3,Q4 And solve any two from Q6,Q7,Q8

Q1) Attempt all questions [7]

a. Explain philosophy of limit state for strength and serviceability [3]

b. What is net sectional area and gross area? Explain how it will be calculated for bolted connections? [4]

Q2) Design a bolted connection between plates of size 100mm wide X 16mm thick and 100mm wide X 10mm thick to transmit the factored load of 100kN. plate material is Fe415. [14]

Q3) Design a single angle section for a tension member of a roof truss to carry a factored tensile force of 150 kN. The angle is connected to 10mm gusset plate with 6 M20 bolts of grade 4.6 in single line. The steel used is of Fe 415 grade [14]

Q4) Find the compressive strength of strut 2 ISA 150X115X10mm connected back to back by longer leg using two bolts at each end as shown in fig. 1. The centre to centre distance of intersection is 3m. [14]

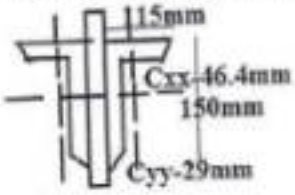

Fig.1 Q4

Q5) All questions compulsory [7]

a. Differentiate between lacing and battening [3]

b. Explain step step by process to design built up column [4]

Q6) Design a slab base for a column ISHB350@710.24 having factored load 1000 kN on the column. The base rests on concrete pedestal of grade M20. Assume the column is machined smooth for perfect bearing. Concrete bearing strength = 9N/mm^2 [14]

Q7) A simply supported beam of 5m span carries uniformly distributed load of 40kN/m. In addition the beam carries a central load of 50 kN. Design the beam if it is laterally supported throughout. Check for deflection. [14]

Q8) Calculate the design forces for a gantry girder to be used in an industrial building carrying a manually operated overhead traveling crane for the following data: [14]

- Crane capacity - 200kN
- Self-weight of the crane girder excluding trolley - 200kN
- Self-weight of the trolley, electric motor, hook, etc. - 40kN
- Approximate minimum approach of the crane hook to the gantry girder - 1.20m
- Wheel base - 3.5m
- c/c distance between gantry rails - 16m
- c/c distance between columns (span of gantry girder) - 8m
- Self weight of rail section - 300N/m

Self weight of gantry girder - 2kN/m

- Diameter of crane wheels - 150mm
- Steel is of grade Fe 410.

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Seat No. CE- 6th Sem 32

Total No. of Pages : 2

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Engineering

Sub. Name: Environmental Engineering-II

Sub. Code: 66877/81517/81794

Day and Date: NOVEMBER ,29-11-2024 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Figures to the right indicate full marks
4. Use Sketches/Diagrams wherever necessary
5. Use of Scientific calculator is allowed

Q1) Solve the following [11]

1. Explain characteristics of municipal wastewater. [5]
2. The BOD5 of wastewater is 150 mg/l at 20 degree celcius. The K value is 0.23. Find out BOD8. [6]

Q2) Answer any two of the following [12]

1. Enlist primary treatment units and explain Grit chamber in detail. [6]
2. Explain the secondary settling tank. [6]
3. Explain the concept of Trickling Filter with sketch. [6]

Q3) Answer any two of the following [12]

1. Explain the concept of anaerobic digestion in detail. [6]
2. Explain aerobic and aneerobic lagoons in detail. [6]
3. Give the design parameters for septic tank. [6]

Q4) Solve the following [11]

1. Explain the concept of Environmental Impact Assessment. [5]
2. Write Streeter Phelp's Equation and explain all details. [6]

Q5) Answer any two of the following [12]

1. Explain types of solid waste in detail. [6]

P.T.O.

2. Explain any one method of 'Composting' with sketch. [6]

3. Write short note on land filling with advantages and disadvantages. [6]

Q6) Answer any two of the following [12]

1. Discuss the issue of 'Ozone Depletion' due to air pollution. [6]

2. Enlist air pollution control equipments and explain ESP in detail. [6]

3. What is the effect of air pollution on man, material and vegetation? [6]

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Seat No. CE- 6th Sem 34

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)
Sub. Name: Theory of Structures
Sub. Code: 66873/81515/81792

Total Marks: 70

Day and Date: NOVEMBER ,26-11-2024
Time: 10:30 AM To 01:00 PM

Instructions:

Special Inst.: **1) Q. No. 1 & Q. No. 5 are compulsory questions.**

2) Solve any two questions from Q. No. 2 to Q. No. 4 and any two questions from Q. No. 6 to Q. No. 8.

3) Figures to the right indicate full marks.

4) Assume suitable data if necessary and state them clearly.

5) Use of non-programmable calculator is allowed.

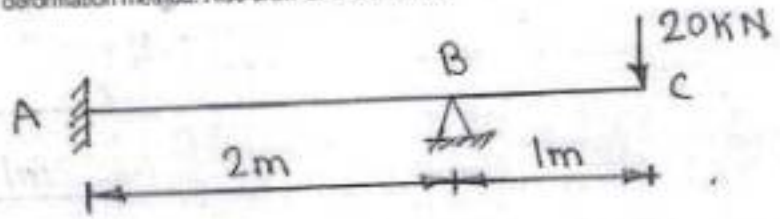
Q1) Write a short Note on following : **[7]**

A) Explain in detail static indeminancy of the structure. [2]

B) Explain in detail Clapeyron's theorem of three moments. [3]

C) What is Unit load method explain in detail. [2]

Q2) Analyse the propped cantilever beam loaded as shown in the figure by using Consistent deformation method. Also draw SFD and BMD. **[14]**

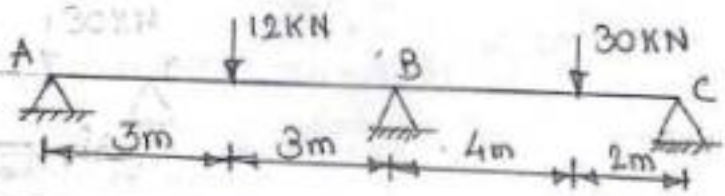


Figure

P.T.O.

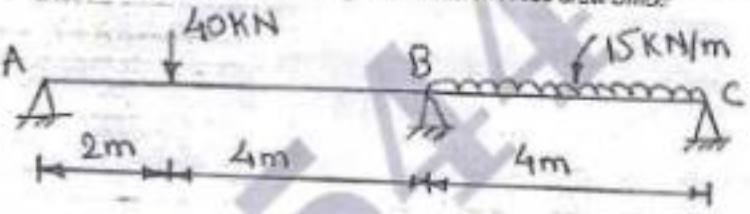
35

Q3) A continuous beam ABC is loaded as shown in the figure below. Find out supports moments and reactions by using Clapeyron's theorem of three moments. Also draw BMD. **[14]**



Figure

Q4) A continuous beam ABC is loaded as shown in the figure below. Find out supports moments and reactions by using Castiglione's theorem. Also draw BMD. **[14]**



Figure

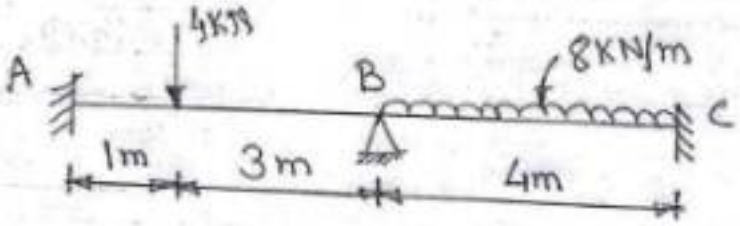
Q5) Write short note on following **[7]**

A) Explain modified Slope and deflection method in detail. [2]

B) Explain distribution factor used in Moment distribution method. [2]

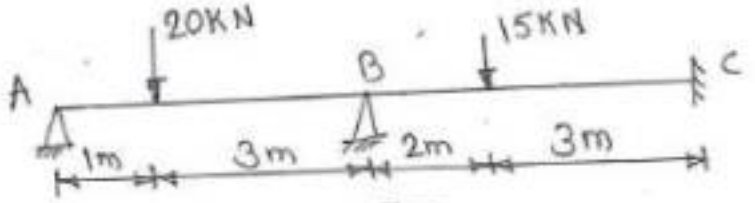
C) Explain step by step procedure of beam analysis by using stiffness matrix. [3]

Q6) A continuous beam is loaded as shown in the figure below. Find out supports moments and reactions by using slope and deflection equation. Also draw BMD. **[14]**



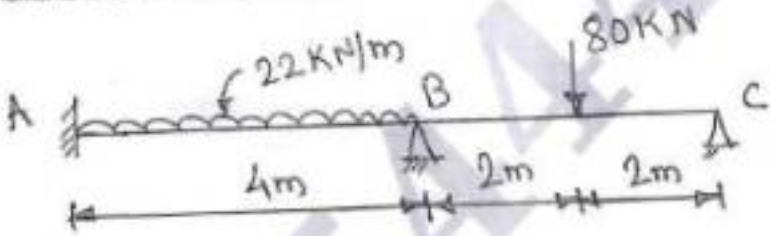
Figure

Q7) A continuous beam ABC is loaded as shown in the figure below. Find out supports moments and reactions by using moment distribution method. Also draw BMD. [14]



Figure

Q8) A continuous beam is loaded as shown in the figure below. Find out supports moments and reactions by using stiffness matrix method. Also draw BMD. [14]



Figure

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QP-1112

Total No. of Pages : 2

Seat No. CE- Sem- VI 37

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Engineering Management

Sub. Code: 66875/81516/81793

Total Marks: 70

Day and Date: NOVEMBER ,28-11-2024

Time: 10:30 AM To 01:00 PM

Instructions:
1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Draw neat labelled diagrams wherever necessary
4. Figures to the right indicate full marks

Q1) Solve the followings. [11]

A. What are the functions of management ? Explain in brief controlling function. [6]

B. Discuss the importance of management in construction. [5]

Q2) Solve the followings. [12]

A. Draw network, find duration, Draw critical path 1) A is first work to be done 2) B and C can be done concurrently and must follow A 3) B must precede D 4) E must succeed C but it can't start until B is completed 5) The last job F depends on D and E 6) A-2, B-3, C-3, D-3, E-5, F-6. [7]

B. Write a short note on - a) Work breakdown structure b) Resource allocation [5]

OR

Explain the different Time estimates used in CPM.

Q3) Solve the followings. [12]

A. For the information given in the table determine the critical path and Duration for project completion. [7]

Activity	Optimistic time	Most likely time	Pessimistic time
1-2	6	9	18
2-3	3	7	17
2-4	4	10	16
2-5	2	6	16
3-5	5	10	21
4-5	6	11	22
5-6	4	7	16

B. Explain advantages of using "Microsoft project' software on construction projects. [5]

P.T.O.

Q4) Solve the followings. [12]

A. Explain in detail VED and SDE analysis. [6]

B. A construction company consumes 14,000 cement bags every year for its construction activities. It requires Rs 270 to place order. Each bag costs Rs 270. If inventory carrying cost is 12% of average inventory investment, find out EOQ. How many times the order can be placed in one year. [6]

Q5) Solve the followings. [12]

A. Write a short note on Net present value& Rate of return. [6]

B. The details of two construction machines are given below. Suggest which construction machine should be purchased. If rate of interest is 12 % Use Present Worth method. [6]

	Machine 'X'	Machine 'Y'
Initial cost (Rs)	100000	160000
Annual O & M cost (Rs)	60000	50000
Selvage value (Rs)	12000	22000
Service life (Yrs)	10	10

Q6) Attempt any Two. [11]

a) Explain the safety measures to be taken on construction site.
b) Draw a site layout for construction of an apartment.
c) Explain the importance and advantages of work study.

* * *

Seat No. CE- 6th Sem 39

SI - 04

Total No. of Pages : 3

T.Y.B.TECH C.B.C.S. EXAMINATION, 2024

Sub.Name: Geotechnical Engineering-II

Sub.Code: 66874 / 81518 / 81795

Day and Date : Wednesday, 27-11-2024 **Total Marks : 70**

Time : 10.30 a.m. to 01.00 p.m.

Instructions:

1.All questions are compulsory.

2. Assume suitable data wherever necessary and mentioned in boldly.

3.Figure to the right indicate full marks.

Special Inst.: Use of non-programmable calculator is allowed.

Q.1)Attempt following questions: **(11)**

a) Define Distributed and un distributed soil sample. (05)

b) Explain Rotary drilling. (06)

Q.2)Attempt the following: **(12)**

a) Describe Meyerhof's bearing capacity. **(06)**

OR

b) Explain static cone penetration test. **(06)**

c) Determine the ultimate bearing capacity of a strip footing, 1.20 mt wide and having deapth of foundation 1.0mt. Use Terzaghi's theory and assume general shear failure. **(06)**

Take : $\emptyset'=33$, $\gamma=18KN/M^3$,$C'=15$ KN/M^2,$N_c=57.8$, $N_q=41.4$,$N_\gamma=42.4$

SI - 04

Q.3) Answer the following questions: **(12)**

a) Explain in detail Floating foundation. **(06)**

OR

b) Describe concept of Total Settlement. **(06)**

c) A 40 cm square bearing plate settles by 20 mm in a plate loading test on cohesion less soil when the intensity of loading is 2 kg/cm² What will be the settlement of prototype footing 1.5 mt square under the same intensity of loading. **(06)**

Q.4) Attempt the following: **(12)**

a) Explain classification of the Pile foundation. **(06)**

OR

b) Define Pile load test. **(06)**

c) A 30 cm dia. Concrete pile is driven into homogeneous consolidated clay deposit (C_u = 40 KN, α = 0.7). If the embedded length is 1.0 mt, Estimate the safe load. (F.S. = 2.5, Nc = 9.0) **(06)**

Q.5)Attempt the following questions: **(11)**

a) Explain types and material used for Sheet Piling. **(05)**

OR

b) What is braced Coffer dam. **(05)**

c) Define importance of Geotextile and Geo membrane in the Civil Engineering. **(06)**

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Q.6) Attempt the following. **(12)**

a) Explain concept of Friction Circle method. **(06)**

b) Determine the factor of safety for cohesive soil(Φ =0), 7 mt high, if it's stability no. is known. to be 0.156. The slope material has cohesion =25KN/m^2 and unit weight is18.5 KN/m^3 **(07)**

□□□

QP-2080

Total No. of Pages : 3

Seat No. CE-4th-Sem 42

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Quantity Survey and Valuation

Sub. Code: 67560/83734/84014

Total Marks: 70

Day and Date: DECEMBER ,09-12-2024

Time: 10:30 AM To 01:30 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Figures to the right indicate full marks
3. Use of Scientific calculator is allowed

Special Inst.: Questions No. 3 is compulsory. Attempt any 2 questions from remaining in Section I and any 3 questions from Section II.

Q1) Attempt all questions [10]

a. What are the principles in selecting the units of measurement? [5]

b. Write the different types of estimate and Explain in brief. [5]

Q2) Attempt all questions [10]

a. What are the specifications? Explain in brief its need to write detailed specifications. [5]

b. What is meant by Task work? Explain its importance in rate analysis with suitable examples. [5]

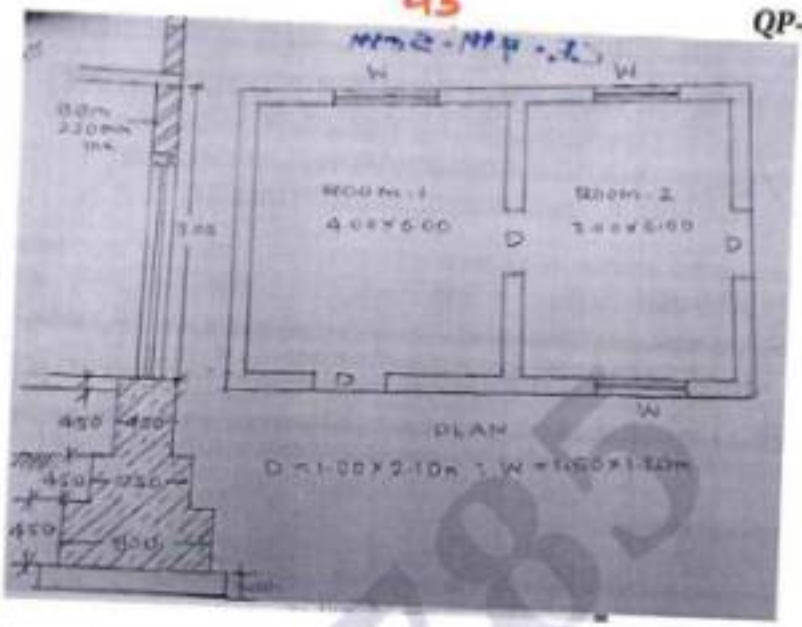
Q3) Attempt all questions [15]

a. The plan and section of building is shown below. [12]
Find out quantity of item for the following work by using P.W.D. method.
1. 0.23 m thk Brick Masonry 2. Kotah Flooring ,
3. Scarting, 4. Internal plastering in cement mortar (1:4), 5. T.W. Door Shutter,
6. Aluminum Window

P.T.O.

43

QP-2080



b. Write a short note on centre line method. [3]

Q4) Write short note (Any TWO) [10]

a. General specification and Detailed specification. [5]

b. Contingencies and Work charged Establishment. [5]

c. Measurement sheet and abstract sheet. [5]

Q5) **Attempt all questions.** [11]

a. Explain Price, cost and value with examples. [5]

b. What is Valuation? What are the different types of Value? [6]

Q6) Attempt the following [11]

a. Define Following terms 1) Gross Income 2) Net Income 3) Outgoings [6]

b. Explain Belting method of valuation with the help of a neat sketch [5]

Q7) Attempt the following [12]

a. A new building having six equal flats is constructed at a cost Rs. 3,00,000/- on a plot of land costing Rs. 1,00,000/-. The owner ecpects 12% return on the construction cost and 8% return on cost of land . Calculate the standard rent for each flat of the building considering the following data:- i) Future life of the [9]

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building be 70 yrs ii) Interest on sinking fund be 6% iii) Scarp value 10% iv) Annual repair at 1% of the cost of construction v) Other outgoings at 30% of the net return from the building(sinking fund coefficient for 70 years @ 6% = 0.0010)

b. Write difference between scrap value and salvage value. [3]

Q8) Write short note (Any Two) [12]

a. Building lease and Occupation lease [6]

b. Capitalized value and year purchase [6]

c. Bar Bending Schedule. [6]

* * *

Total No. of Pages : 2

Seat No. CE-7th Sem 45

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Transportation Engineering - I

Sub. Code: 83735/84015

Total Marks: 70

Day and Date: DECEMBER ,11-12-2024

Time: 10:30 AM To 01:00 PM

Instructions: 1. Draw neat labelled diagrams wherever necessary
2. Figures to the right indicate full marks

Special Inst.: Q.4 AND Q.8 are compulsary.
Attempt any two question from Q.1,2,3 AND any two from 5,6,7

Q1) Attempt any two questions. [10]

a. Define modes of Transportation. [5]

b. Draw various road network pattern and explain in detail. [5]

c. Describe concept of Reaction Time [5]

Q2) Attempt any two questions. [10]

a. Explain the Necessity of widening of pavements on curve with skecth. [5]

b. The radius of horizontal circular curve is 100 mt.The design speed is 50 kmph and design coeff. of lateral friction is 0.15. Calculate the superelevation required if full lateral friction is assumed to develop. [5]

c. Define in detail Intersection and at grade seperated intersections. [5]

Q3) Attempt any two question [10]

a. Explain desirable properties of the biturnen. [5]

b. Describe Concept of Fillers and Sealers. [5]

c. What are stresses in rigid highway pavements? [5]

Q4) Attempt all the questions: [15]

a. Terrain classification [5]

b. Concept of Summit Curves [5]

P.T.O.

c. Impact value of aggregates(fig.not required) only significance,procedure,conclusion [5]

Q5) Attempt any two questions: [10]

a. Describe flexible pavement failure. [5]

b. What is Pavement Management System? [5]

c. Define:1)Geogrids 2)Geotextiles [5]

Q6) Attempt any two questions: [10]

a. Describe Parking studies.Expalin any one in detail [5]

b. Explain concept of Traffic Signal [5]

c. What is Sub-Drainage system?Explain in detail [5]

Q7) Attempt any two questions [10]

a. Explain Shield method [5]

b. Define Tunelling in soft rock [5]

c. Desribe concept of ventilation of tunelling [5]

Q8) Attempt all the questions [15]

a. Safety measures of Tunelling [5]

b. Types of Overlays [5]

c. Design of Rotary Intersection [5]

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QP-1936

Total No. of Pages : 2

Seat No. CE - 7th Sem 47

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Earthquake Engineering

Sub. Code: 67559/83733/84013

Total Marks: 70

Day and Date: DECEMBER ,06-12-2024

Time: 10:30 AM To 01:00 PM

Instructions:
1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Figures to the right indicate full marks
4. Use of Scientific calculator is allowed

Special Inst.: Use of IS 1893_2016 (part-I) is permitted

Q1) Solve all questions [7]

a. Define , Focus Epicenter & Explain, Interior structure of earth. [7]

b. Explain plate boundaries and plate tectonic theory [7]

Q2) Solve any two [14]

a. Derive solution for free undamped vibration [7]

b. Explain , Duhamel's Integral [7]

c. A vibrating system consists of a mass of a 50kg, a spring of stiffness 30kN/mm and a damper. The damping provided is only 20% of the critical value. Find damping factor, theoretical damping coefficient, damped frequency, logarithmic decrement and ratio of two consecutive amplitudes. [7]

Q3) Plan and elevation of a four-storey reinforced concrete office building is shown in Fig. Q3. The details of the building are as follows. [14]

Number of Storey = 4
Zone = III
Live Load = 3 kN/m2
Columns = 450 x 450 mm
Beams = 250 x 400 mm
-Thickness of Slab = 150 mm
Thickness of Wall = 120 mm
Importance factor = 1.0
Structure type = OMRF Building
Determine design seismic lateral load and storey shear force distribution

P.T.O.

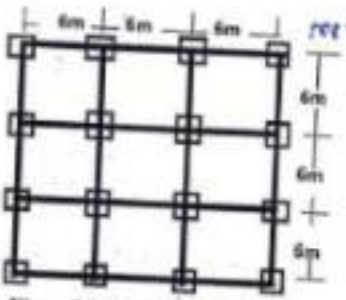

Fig. Q3-Plan of Building

Elevation

Q4) Solve any 2 [12]

a. How dose ductility affect overall behavior of the building? [6]

b. Explain, EQ Design Philosophy. [6]

c. Write a note on , Load Path [6]

Q5) Solve all [12]

a. Explain Behavior of Unreinforced Masonry during earthquake [6]

b. What is jacketing? Explain the jacketing of column or beam with illustrative sketch [6]

Q6) Solve all [11]

a. Explain any one base isolation system [5]

b. What is damper? Explain any one with neat sketch [6]

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QP-1742

Seat No. CE-7th Sem 49 Total No. of Pages : 2

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Design of Concrete Structures-I

Sub. Code: 67558/83732/84012

Day and Date: DECEMBER ,04-12-2024 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Draw neat labelled diagrams wherever necessary
4. Figures to the right indicate full marks
5. Use of Scientific calculator is allowed

Special Inst.: Use of IS 456:2000 is allowed.

Q1) Answer the following questions. **[12]**

a. Find Xmax, Pt,lim, and Mu,lim for Fe250 and M20 grade concrete **[6]**

b. Explain the following **[6]**
i) Characteristic Loads
ii) Partial Safety Factors

Q2) A rectangular RCC beam of size 230mm wide and 430mm depth is reinforced with 4-20mmΦ diameter bars. The effective span of beam is 4.5m and clear cover to the reinforcement is 30mm. Find the safe load the beam can carry. Use M20 grade concrete and Fe415 grade steel. **[12]**

OR

Find MR of T-beam with following data,
bf : 740mm
d :400mm
bw :240mm
Df :80mm
Ast :5-20mmΦ
Use Mild Steel and M15 Concrete

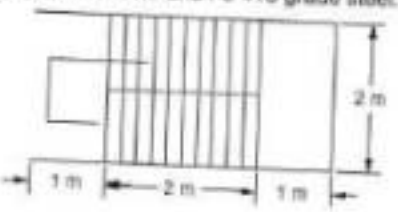
Q3) A simply supported beam 300mm wide & 500mm depth carries a uniformly distributed load of 50kN/m including its own weight over a effective span of 6m. Design shear reinforcement in the form of vertical stirrups. Assume beam contains 0.75% reinforcement throughout the length & the concrete is M20 grade & steel Fe250. The width of support is 400mm. **[11]**

Q4) Design a simply supported slab for a room 7m x 3m clear in size if the super imposed load is 5kN/m2. Use M20 concrete and Fe415 grade steel. **[12]**

OR

P.T.O.

Design a dog-legged staircase for the following data:
Floor to Floor height – 2.88m
Rise – 160mm
Use M20 concrete and Fe 415 grade steel.



Q5) Answer the following questions **[12]**

a. Explain the functions of Longitudinal and Transverse reinforcement in RC column **[4]**

b. Design a Circular Column to carry an axial service load of 1000kN. Use M20 concrete and Fe415 steel **[8]**

Q6) Design an isolated rectangular R.C.C. footing for a column of size 230 mm x 450 mm carrying an axial load of 800 kN. Assume S.B.C. is 180 kN/m2 .Use M20 concrete & Fe415 steel grades. Draw the neat sketch showing all the necessary details of reinforcement **[11]**

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QP-2400

Total No. of Pages : 2

Seat No. CE-7th Sem 51

OCT_NOV_2024 WINTER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Solid Waste Management

Sub. Code: 67569/83739/84019

Total Marks: 70

Day and Date: DECEMBER ,13-12-2024

Time: 10:30 AM To 01:00 PM

Instructions:
1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Figures to the right indicate full marks

Special Inst.: Q. No. 4 and Q. No. 8 are compulsory and attempt any two questions from Q. No. 1, 2, 3 and any two questions from Q. No. 5, 6, 7.

Q1) Answer the following questions [10]

a. Elaborate the goals and objective of solid waste management. [5]

b. Write short notes on hazardous waste [5]

Q2) Answer the following questions [10]

a. What is onsite segregation of solid waste ? state its necessity. [5]

b. Write short notes on stationary container systems. [5]

Q3) Answer the following questions [10]

a. What are the different types of Transfer Station? [5]

b. What is MRF? Explain the processes for MSW at these facilities. [5]

Q4) Answer the following questions [15]

a. Write the present scenario of Municipal Solid Waste Management [5]

b. Define following Unit Operation w.r.t. HCS :- [5]
a) Pick up b) At-site

c. List out the different equipment used for processing solid waste. [5]

Q5) Answer the following questions [10]

a. Write the site selection criteria for MSW Landfill. [5]

b. Write a note on Post Closure Plan of sanitary landfill. [5]

P.T.O.

Q6) Answer the following questions [10]

a. Explain Theory of Composting. [5]

b. Explain Bangalore method of Composting for small towns. [5]

Q7) Answer the following questions [10]

a. Explain various elements of incineration system. [5]

b. Explain pyrolysis and its products. [5]

Q8) Answer the following questions [15]

a. List maintenance and precautions required for sanitary landfill. [5]

b. Differentiate between Aerobic & Anaerobic Composting. [5]

c. List & explain the different factors affecting incineration. [5]

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OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Engineering

Sub. Name: Advanced Design of Concrete Structures

Sub. Code: 67751/84753/84938

Day and Date: NOVEMBER ,29-11-2024 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions:
1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Draw neat labelled diagrams wherever necessary
4. Figures to the right indicate full marks
5. Use of Scientific calculator is allowed

Special Inst.: Use of IS 4546:2000, IS 3370 is allowed

Q1) Design an interior panel of a flat slab of size 5m × 5m without providing drop and column head. Size of columns is 500 × 500 mm and live load on the panel is 4kN/m2. Take floor finishing load as 1kN/m2. Use M20 concrete and Fe415 steel. No checks are required **[12]**

Q2) Design a simply supported 300mm thick RCC vertical deep beam of height 4.0m, which is supported over 500mm wide piers having a clear spacing of 5.0m. The beam carries a service superimposed load of 200kN/m. Assume M20 concrete and Fe415 steel. **[12]**

Q3) Design a chimney of height 70m, Given **[11]**
External Diameter -(i) at top -4m
(ii) at base – 4.8m
Shell thickness -(i) at top -200mm
(ii) at base - 400mm
Wind intensity 1.8kN/m2, throught.
Thickness of fire brick lining 100mm.
Air gap -100mm
Temperature difference -700C.
Coefficient of thermal expansion -11×10-6/C0
Es - 210×103 N/mm2
Unit weight of brick lined -20kN/m3
Use M25 concrete and Fe 415 grade steel.

Q4) Design a flat bottom circular elevated water tank of diameter 10m and total height 3.2m which is to be supported by ring beam of 9m diameter. The ring beam is to be supported by eight columns equally placed. Use M25 concrete and Fe415 steel. Design the following components, **[12]**
a) Top dome
b) Top ring beam

P.T.O.

Q5) Design a cantilever retaining wall to retain an earth embankment with horizontal top 3m above ground level. Density of earth=18kN/m3. Angle of internal friction Φ=300 SBC of soil is 200kN/m2.Take coefficient of friction between soil and concrete =0.5. Adopt M20 grade concrete and Fe-415 steel. Show reinforcement details. **[12]**

OR

A counterfort retaining wall is to be constructed to retain a backfill of 5.5m above ground level.
SBC of soil : 180kN/m2
Angle Of Internal Friction :30
Unit weight of soil : 16kN/m3
Spacing of Counterfort : 4m c/c
Grade of concrete : M20
Coefficient of friction between soil and concrete : 0.60
Check the stability and design the toe slab.

Q6) A rectangular slab of size 4m×6m which is simply supported along the edges and has to carry a service live load of 4kN/m2. Assume coefficient of orthotropy μ = 0.75. Use M20 concrete and Fe415 steel. The design may be restricted to bending only **[11]**

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QP-1457

Seat No: CE-8th-Sem SS

Total No. of Pages : 1

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Engineering

Sub. Name: Advanced Construction Techniques

Sub. Code: 67764/84759/84944

Day and Date: NOVEMBER ,30-11-2024

Time: 02:30 PM To 05:00 PM

Total Marks: 70

Instructions: 1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Figures to the right indicate full marks

Special Inst.: Answer shall be supported by adequate sketches

Q1) Attempt all questions. [12]

a) Explain sketch, the behavior of composite & non composite materials.

b) Enlist the design load for formwork.

Q2) Attempt any Two. [11]

a) Explain fibre reinforced concrete & their advantages.

b) What is Adhesive? Write their Uses.

c) Define Geosynthetics. State Benefits& Barriers.

Q3) Attempt any Two. [12]

a) What is vibro compaction? Explain the methods of vibro compaction.

b) Explain Soil nailing in detail with sketch.

c) What is Soilcrete? Explain in detail.

Q4) Attempt all questions [12]

a) What is Cofferdam? Write the necessity of cofferdam

b) Explain different types of Caissons with neat sketch

Q5) Attempt any Two. [11]

a) Explain the necessity of Bridge Rehabilitation.

b) Write a note on Diaphragm walls.

c) Explain Methods of Bridge rehabilitation with sketch.

Q6) Attempt any Two. [12]

a) Explain with neat Sketch the Vacuum Dewatering Process.

b)State the Mechanism of Revibration of concrete.

c)Explain the Importance of Strengthening of Foundations.

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QP-935

Total No. of Pages : 2

Seat No. CE-8th Sem 56

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Water Resources Engineering - II

Sub. Code: 67749/84746/84931

Day and Date: NOVEMBER ,27-11-2024

Total Marks: 70

Time: 02:30 PM To 05:00 PM

Instructions:
1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks
4. Use of calculator and statistical table is allowed

Special Inst.: Question number 4 and 8 is compulsory. Solve any two questions from question number 1,2 and 3 and solve any two questions from question number 5,6 and 7.

Q1) a) Which are the factors affecting selection of type of reservoir? (5) **[10]**
b) Explain criterion for safe design of earthen dam ? (5)

Q2) a) How to check the stability of gravity dam section? (5) **[10]**
b) What is high dam and low dam ? (5)

Q3) a) What are the essential requirements of the spillway? How would you select a suitable site for the spillway? (5) **[10]**
b) Draw a typical layout of outlet through earthen dam and gravity dam describe in short ? (5)

Q4) Write short Notes on: (Solve any three) **[15]**
a) Theoritical profile of gravity dam (5)
b) Components of earthen Dam (5)
c) Ogee Spillway (5)
d) Reservoir Sedimentation (5)

Q5) a) What is exit gradient ? Explain the concept of exit gradient in Khosals theory ? (5) **[10]**
b) What are the limitations of Bligh's creep theory ? (5)

Q6) a) Describe different types of canal lining ? (5) **[10]**
b) What is the necessity of canal lining ? Also justify economics of canal lining?

Q7) a) Give Classifications of rivers ? (5) **[10]**
b) How hydel power plants are superior than thermal power plant ?(5)

Q8) Write short notes on:(Solve any three) **[15]**
a) Marginal Bund and Guide Bank (5)
b) Khosal's Theory (5)
c) Daft Tube and Scroll casing (5)

P.T.O.

d) Diversion Headwork (5)

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Total No. of Pages : 2

Seat No. CE. Sem. 6th 58

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Transportation Engineering-II

Sub. Code: 67750/84747/84932

Day and Date: NOVEMBER ,28-11-2024

Total Marks: 70

Time: 02:30 PM To 05:00 PM

Instructions: 1. Draw neat labelled diagrams wherever necessary
2. Figures to the right indicate full marks

Special Inst.: Q. No.4 and Q. No. 8 are compulsory and attempt any two questions from Q. No. 1,2,3 and any two questions from Q. No. 5,6,7.

Q1) Attempt all questions. [10]

a. Explain the factors affecting the site selection for an airport. [5]

b. Write a detailed note on various Airport Surveys. [5]

Q2) Attempt all questions. [10]

a. Describe the movement of an aircraft in three principal axes with a neat sketch. [5]

b. Write a note on: Airport Obstructions. [5]

Q3) Attempt all questions. [10]

a. Explain in detail Natural phenomena of Tides and Waves. [5]

b. Explain 'Dry Docks' with a neat sketch. [5]

Q4) Write a short note on the following. [15]

a. ICAO [5]

b. Runway Lighting [5]

c. Site selection of harbor. [5]

Q5) Attempt all questions. [10]

a. State the requirement of a railway station. [5]

b. What is permanent way? Give requirement of an ideal permanent way. [5]

Q6) Attempt all questions. [10]

P.T.O.

a. Describe the stages of construction of railway track. [5]

b. Describe the daily and periodic maintenance of railway track. [5]

Q7) Attempt all questions. [10]

a. Differentiate between Permanent and Temporary Bridges. [5]

b. State the types of bridge bearing and explain the suitability of each. [5]

Q8) Write a short note on the following. [15]

a. Factor considering alignment of track. [5]

b. Importance of bridge maintenance. [5]

c. Site selection of stations and yard. [5]

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QP-718

Total No. of Pages : 2

Seat No. CE- 8th Sem 60

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Technology (NEP-2.0)

Sub. Name: Design of Concrete Structures-II

Sub. Code: 67748/84745/84930

Total Marks: 70

Day and Date: NOVEMBER ,26-11-2024

Time: 02:30 PM To 05:00 PM

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Figures to the right indicate full marks**
4. **Use of Scientific calculator is allowed**

Special Inst.: Use of I.S.: - 456 Code is allowed

Q1) Design the Reinforcement required for the rectangular beam with following data. Use M20 grade Concrete and Fe415 Grade of Steel. Size of the beam 400mm X 800mm overall. Factored Shear Force 100 KN. Factored Torsional Moment 50 KNm. Factored Bending Moment 120 KNm **[11]**

Q2) .Design the section for a R C C beam 230mm wide to resist a design moment of 63 KNm, by allowing 20 % redistribution of moment. Use M20 grade Concrete and Fe415 Grade of Steel. **[12]**

OR

Design longitudinal reinforcement for three span continuous beams having equal spans of 4m each. The beam support live load of 16 KN/m and dead load of 20 KN/m. Use IS code provisions and Use M20 grade Concrete and Fe415 Grade of Steel.

Q3) Design Circular Water tank to hold 4 lakes liters of water. The depth of water is 4m. The joint between floor and wall of the tank is to be rigid and the walls of the tank are free at top. Use M20 grade Concrete and Fe415 Grade of Steel. **[12]**

Q4) A prestressed concrete beam section of 400 mm X 500 mm deep is used as simply supported beam over an effective span of 9m. The prestressing force of 700 KN is applied with an eccentricity of 80 mm at mid span section. If the permissible stress in the concrete are 15 N/mm2 in compression and Zero in tension, estimate the udl that beam can carry in addition to its self weight **[12]**

Q5) A Pretensioned prestress concrete beam of 9m span having a cross section of 400mm X 800mm and is prestressed with 2000KN at transfer. The cable has cross sectional area of 2000mm2 and has a parabolic profile with maximum eccentricity of 120mm at the middle of span and zero at end. Determine the total % loss of prestress in the tendon. Take - Es - 210000N/mm2, Ec -31000N/mm2, Shrinkage strain – 0.0003, Creep Coefficient – 1.5, Relaxation of Steel -4 %. **[11]**

P.T.O.

Q6) Design a prestressed concrete beam to the following data. [12]

i) Span = 15 m, ii) Live load = 30 KN/m

iii) Allowable initial compressive stress in concrete = 17 N/mm2

iv) Allowable final compressive stress in concrete = 14 N/mm2

v) Total loss of prestress = 15 %

vi) Allowable initial and final stage tensile stress in concrete = 1 N/mm2

vii) Safe stress in steel = 1050 N/mm2

OR

Solve any Two of the Following

i) Explain in detail different Systems of Prestressing

ii) Explain in detail different concepts of analysis of prestress sections.

iii) Explain Merits and Demerits of prestressed concrete

* * *