GOVERNMENT POLYTECHNIC, KOLHAPUR 416004.

(An Autonomous Institute of Govt. of Maharashtra)

EVEN TERM END EXAM SUMMER -2023

EXAM SEAT NO. | | | | | | |

LEVEL: **THIRD** PROGRAM: **CIVIL ENGINEERING**

COURSE CODE: **CEG308/CEF308** COURSE NAME: **Surveying I**

MAX. MARKS: **80** TIME: **3 HRS.** DATE: **31/05/2023**

Instruction:-

1) Answer must be written in main answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**-Question No, **SQN**-Sub-Question No, **R**- Remembering, **U**-Understanding, **A**-Application **CO**-Course outcome

QN	SQN	QUESTION TEXT	RUA	CO CEG 308	Marks
Q.1	A	Attempt any **FOUR**			**(08)**
	a)	Define : i) plane survey ii) Geodetic survey	R	01	
	b)	State any two objects of surveying.	R	01	
	c)	State any two uses of surveying.	R	01	
	d)	List the instruments used for setting out right angles.	R	02	
	e)	Define : i) True meridian ii) Magnetic meridian.	R	03	
	f)	Define : i) Local attraction ii) Magnetic declination.	R	03	
Q.2	A	Attempt any **FOUR**			**(16)**
	a)	State and explain the code of signals used during ranging.	U	01	
	b)	Explain the process of chaining on sloping ground.	U	01	
	c)	State and explain the following terms used in chain surveying with neat sketch. i) Base line ii) Tie or subsidiary line iii) check line	U	02	
	d)	Draw the following conventional signs and symbols related to survey. i) Double Track Railway ii) Road in embankment. iii) Marshy land iv) Fencing.	U	02	
	e)	If there is a closing error in the traverse, state the methods of applying corrections. Explain in brief.	U	03	
	f)	Explain the temporary adjustment of prismatic compass.	U	03	
Q.3		Attempt any **FOUR**			**(16)**
	a)	Following corrected fore bearing were observed in running a closed traverse with prismatic compass. Side: AB — Fore Bearing: $290^0 30'$; BC — $250^0 30'$; CD — $196^0 00'$; DE — $175^0 30'$; EF — $112^0 00'$; FA — $30^0 00'$ Determine included angles and angular error.	A	03	
	b)	Explain with neat sketch, the construction and working of optical square.	U	02	
	c)	A Road actually 1410m. long was found to be 1406m. long when measured by a defective chain of 30m. length. How much correction does the chain need?	A	03	

P.T.O.

	d)	Following are the observed bearings of the line. Find their back bearings. i) $40^0 30'$ ii) $N38^0 30'E$ iii) $168^0 45'$ iv) $N20^0 12'E$	A	03	
	e)	List the various obstacles in chaining & explain any one in detail.	U	02	
	f)	Following are the observed bearings of the lines of a traverse ABCDEA with a prismatic compass in a place where local attraction is suspected. Find the correct bearings of the lines.	A	03	

Line	FB	BB
AB	$191^0 45'$	$13^0 00'$
BC	$39^0 30'$	$222^0 30'$
CD	$22^0 15'$	$200^0 30'$
DE	$242^0 45'$	$62^0 45'$
EA	$330^0 15'$	$147^0 45'$

QN	SQN	QUESTION TEXT`	RUA	CO MEG 308	Marks
Q.4		Attempt any **FOUR**			**(08)**
	a)	State the fundamental axis of dumpy level.	U	04	
	b)	Define the terms contour and contour lines.	R	05	
	c)	Enlist the components of digital planimeter.	R	06	
	d)	Define the term datum surface.	R	04	
	e)	Define horizontal equivalent.	U	05	
	f)	Define leveling.	R	04	
Q.5		Attempt any **FOUR**			**(16)**
	a)	Explain the procedure of cross section leveling with neat sketch.	R	04	
	b)	The following consecutive readings were taken with a dumpy level and 4m leveling staff on a continuously soling ground at a common interval of 30m. 3.820 on A, 3.125, 2.350, 1.580, 0.830, 3.500, 2.830, 2.010, 1.400, 0.550, 3.650, 2.650, 1.850, 0.965. The R.L. of A was 500m. Calculate the R.L. of all points by Rise and Fall method. Apply usual checks.	A	04	
	c)	Explain any four uses of contour map.	R	05	
	d)	Explain the procedure of finding area of irregular figure by using polar planimeter.	R	05	
	e)	Explain different sources of errors in leveling.	U	04	
	f)	State any eight component parts of dumpy level with their functions.	U	04	
Q.6		Attempt any **FOUR**			**(16)**
	a)	Differentiate between height of instrument and rise and fall method.	A	04	
	b)	Explain the stepwise procedure of interpolation of contour by arithmetic method with suitable example.	R	05	
	c)	State any four advantages of auto level.	R	04	
	d)	Explain any four characteristics of contour lines.	R	05	
	e)	An irregular area was measured with planimeter, keeping the anchor paint inside the figure. The following readings were obtained I.R.=9.358, F.R.=4.425. The zero mark crossed the fixed index once in anticlockwise direction, M=100,C=28.4. Calculate the area of figure.	A	06	
	f)	State various types of leveling staff draw neat sketch of 4m leveling shaft.	A	04	

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WINTER/SUMMER- 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - **THIRD** PROGRAM : **CIVIL ENGINEERING**

COURSE CODE :- **CEG310/CEF310**

COURSE NAME :- **TRANSPORATATION ENGINEERING**

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 31 / **05** / **2023**

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	**SECTION -I**	R/U/A	Co	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	State the importance of transportation engineering.	R	1	
	b)	Draw a neat labelled sketch of flexible pavement.	A	2	
	c)	State the objects of super elevation any four.	R	1	
	d)	Define Tunnel Surveying.	R	3	
	e)	Distinguish between 'Bitumen' and 'Tar' (Any four)	U	2	
	f)	Enlist the methods of tunneling in soft rock	U	3	
Q.2		Attempt any **FOUR:**			**16**
	a)	State the any eight factors affecting on alignment of road.	R	1	
	b)	Explain the construction procedure of concrete road by Continuous bay method	U	2	
	c)	Enlist various shapes of tunnels and Explain anyone with a neat sketch.	U	3	
	d)	Enlist types of sight distance and explain any one in detail.	U	1	
	e)	Explain the construction procedure for bituminous bound macadam road.	U	2	
	f)	Define 1) Camber 2) Right of way 3) Shoulder 4) width of carriageway.	R	1	
Q.3		Attempt any **FOUR:**			**16**
	a)	Define shoulder. State the objectives of providing shoulder.	U	1	
	b)	Explain any one method of tunneling in hard rock.	U	3	
	c)	Define term shaft, Explain step by step procedure of construction of shaft.	A	3	
	d)	Draw the C/S of National Highway in cutting and label the parts.	A	2	
	e)	Describe expansion joint with a neat sketch	A	2	
	f)	Explain i) Tack coat ii) Prime coat.	U	2	

P.T.O.

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WINTER/SUMMER- 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - THIRD PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG310 / CEP310

COURSE NAME :- TRANSPORTATION ENGINEERING

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 31/05/23

QN	SQN	SECTION –II	R/U/A	Co CEG310	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Define sleeper density.	R	4	
	b)	Define Yards	R	5	
	c)	Define - i)Wing rail ii) Check rail	R	5	
	d)	State any necessity of points & crossing	U	5	
	e)	Write any two duties of key man.	U	5	
	f)	Mention any four types of bridge foundations.	A	6	
Q.5		Attempt any **FOUR:**			**16**
	a)	State any eight requirements of ideal permanent way.	R	4	
	b)	Draw a dimensional sketch of flat footed rail.	U	4	
	c)	Draw a neat labelled sketch of Left Hand Turnout & name all different parts.	U	5	
	d)	Explain terminal station with a neat sketch.	A	5	
	e)	Sketch the RCC girder bridge & write its suitability.	U	6	
	f)	Describe simple suspension bridge with a neat sketch.	A	6	
Q.6		Attempt any **FOUR:**			**16**
	a)	Enlist any four components of permanent way & write its function.	U	4	
	b)	With the help of labelled sketch explain necessity of coning of wheel.	A	4	
	c)	What is meaning of fixtures & fastening? Enlist any six types of it.	U	4	
	d)	i) State the necessity of bearings in bridge. ii) Mention any four types of bearings suitable for RCC Girder Bridge.	U A	6 6	
	e)	Draw a sketch of any four types of abutment without wing wall.	U	6	
	f)	If you are a bridge inspector, what are the various points you will observe during routine maintenance work.(any eight points)	A	6	

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WINTER/SUMMER- 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - FOURTH PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG 404 / CEF404

COURSE NAME :- ESTIMATING AND COSTING

MAX. MARKS : **80** TIME : **04 Hrs** DATE :-30/05/23

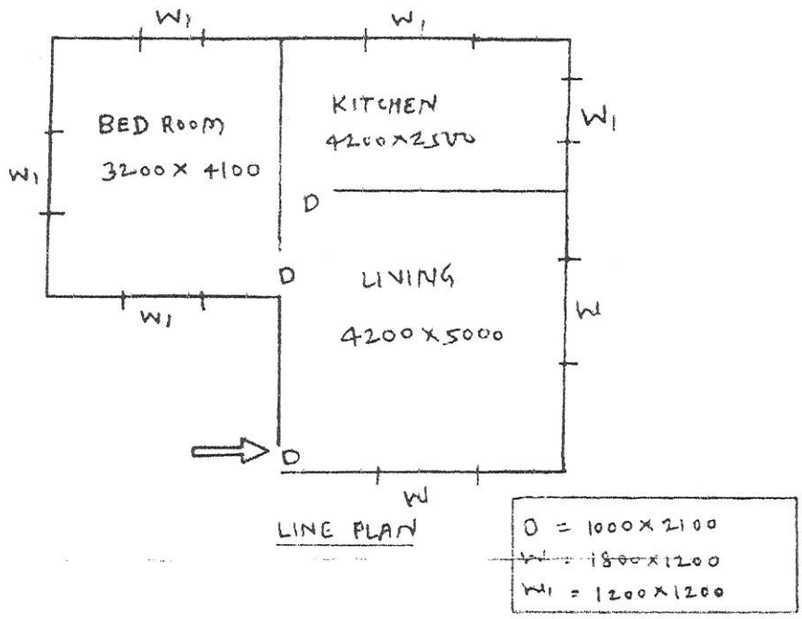
Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	SECTION -I	R/U/A	Co	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	State the purpose of Estimating and Costing.	R	1	02
	b)	Enlist method of Approximate estimates used for buildings.	R	1	02
	c)	Write the data required for detailed estimate.	U	2	02
	d)	Mention the situations under which Supplementary estimate is prepared.	U	2	02
	e)	What is plinth area method of preparing approximate estimate?	R	1	02
	f)	State the meaning of Day work	R	2	02
Q.2		Attempt any **FOUR:**			**16**
	a)	Explain D.S.R.	R	1	4
	b)	Calculate the approximate estimate of a proposed building having plinth area of 182sqm & height of 6.5m. Similar type of building constructed in the same locality for Rs 22,40,000/- & having a plinth area of 140sqm & height of 6.0m. Use cubical content method	A	1	4
	c)	Give the mode of measurement for the following items i. White wash for celing ii. 75 mm P.V.C Pipe iii. Ashlar stone masonry iv. Excavation in hard murum	R	1	4
	d)	Workout the quantities of M.S. reinforcement for a Beam with following data. Assume Effective cover as 25 mm Item: Beam; Overall size: 5000mm long Size 300mm X450mm; Details of Reinforcement: a. Main bar- 4Nos. ,12mm ø (2 straight & 2 bent-up) b. Anchor bars -2Nos., 10mm ø c. Stirrups – 6mm ø @ 150 mm c/c	A	3	4
	e)	Write a short note on Work charged establishment.	R	2	4
	f)	Explain factors to be considered while preparing detailed estimate	U	2	4

(P.T.O.)

Q.3		**Attempt the following :**			**16**
	a)	Figure no.1 shows the line plan showing internal sizes of rooms and section of a wall, with all dimensions in mm. Plinth height is 600 mm and depth of excavation is 1.15 mt. Workout the quantities of any **four** items and enter them in standard measurement sheet. Consider Brick wall thickness as 300 mm in plan (Use Center Line Method) i. Earthwork for foundation ii. UCR masonry in foundation and plinth iii. B.B. masonry in superstructure in cm (1:6), considering deductions for door and windows only iv. Internal plaster 20 mm thick in cm (1:4) for brick masonry, considering necessary deductions from internal plaster v. Mosaic tiles flooring vi. Celing plaster 6 mm thick	A	3	16



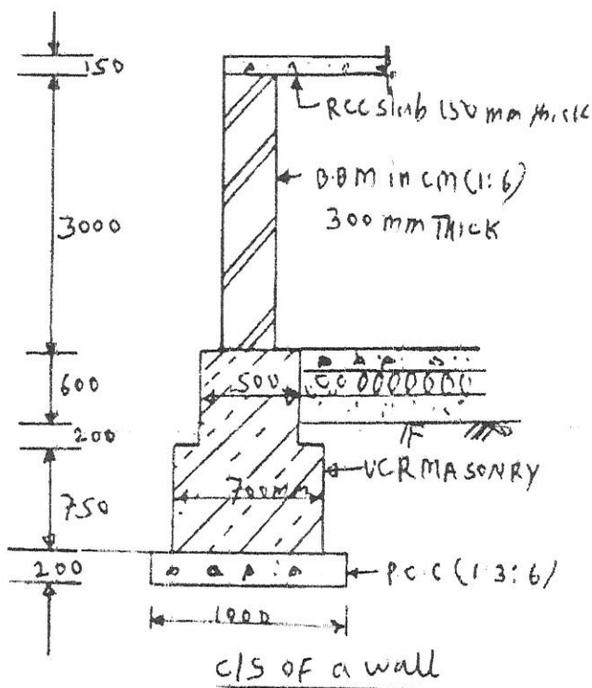


Fig. No. 1

GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

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WINTER/SUMMER-2023

EXAM SEAT NO. | | | | | | |

LEVEL : - IV PROGRAM : Civil Engineering.

COURSE CODE :- CEG 404 / CEf404

COURSE NAME :- Estimating and Costing

MAX. MARKS : **80** TIME : **04 Hrs** DATE :-30/05/2023

QN	SQN	SECTION –II	R/U/A	Co CEG 404	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Enlist the types of specifications.	R	Co4	
	b)	Enlist the points to be considered while framing specifications.	U	Co4	
	c)	Define rate analysis.	R	Co5	
	d)	Enlist any four data required for preparing rate analysis.	U	Co5	
	e)	State the prismoidal formula of earthwork calculation with meaning of each abbreviation used in formula.	R	Co6	
	f)	Enlist the methods used for calculation of earthwork quantities.	R	Co6	
Q.5		Attempt any **FOUR:**			**16**
	a)	Draft a detailed specification for PCC M15.	A	Co4	
	b)	Calculate the quantities of materials required for 30 m^3 UCR masonary in cement mortor 1:6	A	Co5	
	c)	Explain in detail factors affecting rate analysis.	U	Co5	
	d)	Define task work and explain factors affecting task work.	U	Co5	
	e)	Calculate the quantities of earth work from the following data by using mean area method. i)Bed width of canal 10 m.ii) Side slope of canal 1:1 (H:V) .	A	Co6	
	f)	Calculate the quantities of cement and sand for i)RCC(1:2:4)-25m^3 ii)Plaster 12 mm thick (1:6)-100m^2	A	Co5	
Q.6		Attempt any **Two**			**16**
	a)	Prepare rate analysis for PCC (1:2:4) for 25cu.m	A	Co5	
	b)	Draft the detailed specification for RCC.	A	Co4	
	c)	Calculate the quantities of earth work in cutting and in banking for a portion of road with following data: i)Formation width of road is 12 m. ii)Formation level of starting chainage is 51.40 m. iii)Road surface shall be given a falling gradient of 1 in 200. iv)side slopes are 1V:2H in banking and 1V:1.5H in cutting. Use mid sectional area method.	A	Co6	

Chainage in m	30	60	90	120	150	180
Depth of cutting m	1.8	2.0	2.5	2.7	3.00	3.2

Chainage in m	0	30	60	90	120	150	180
GL in m	50.80	50.60	50.70	51.20	51.40	51.30	51.00

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EVEN TERM END EXAM SUMMER -2023

EXAM SEAT NO. | | | | | | |

LEVEL: **THIRD** PROGRAM: **CIVIL ENGINEERING**

COURSE CODE: **CEG309/CEF309** COURSE NAME: **Serveying II**

MAX. MARKS: **80** TIME: **3 HRS.** DATE: **29/05/2023**

Instruction:-

1) Answer must be written in main answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**-Question No, **SQN**-Sub-Question No, **R**- Remembering, **U**-Understanding, **A**-Application **CO**-Course outcome

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QN	SQN	QUESTION TEXT	RUA	CO CEG309	Marks
1	A	Attempt any **FOUR**			**(08)**
	a)	List the types of theodolite.	R	01	
	b)	Define : Angle of elevation and angle of depression, w.r.t. theodolite survey.	R	01	
	c)	State any four uses of theodolite.	R	01	
	d)	State the process of changing face of the instrument.	R	02	
	e)	Define : i) Telescope normal ii) Axis of telescope.	R	01	
	f)	State the meaning of the terms- i) Face left observation ii) ii) Face right observation, w.r.t. theodolite	R	01	
Q.2	A	Attempt any **FOUR**			**(16)**
	a)	Explain the temporary adjustments of theodolite.	U	01	
	b)	Explain the procedure to determine tacheometric constants in the field.	U	02	
	c)	Explain the procedure to measure vertical angle using theodolite with neat sketch.	U	01	
	d)	State the situations under which tacheometry is used. Explain the principle of tacheometry.	U	02	
	e)	State and explain the sources of errors in theodilite survey.	U	01	
	f)	Enlist the fundamental lines of theodolite and give desirable relationship between them.	U	01	
Q.3		Attempt any **TWO**			**(16)**
	a)	i) The co-ordinates of two points C and D are as follows:-	A	01	

Point	Co-ordinate	
	N	S
C	982.5	825.2
D	1198.6	576.4

Find the length and bearing of CD

ii) The interior angles of traverse ABCDE are measured as follows: $\angle A = 76^0 12'00$, $\angle B = 112^0 12'06''$, $\angle C = 98^0 12'40''$ $\angle D = 130^0 09'20''$, $\angle E = 123^0 14'00''$. The bearing of initial line AB is observed as $217^0 50'20''$ Find out the bearing of remaining sides.

P.T.O.

	b)	A tacheometer was set up at a station 'A' and the readings on a vertically held staff were recorded as follows. If the constants of the instruments were 100 and 0.1, find the horizontal distance from A to B and reduced level of B. Station | Staff station | Vertical Angle | Hair Readings | Remark A | BM | $-5^0 12'$ | 1.150,1.195,1.225 | R.L. of B.M. =251.400m A | B | $+12^0 00'$ | 1.030,1.140,1.250 |	A	02	
	c)	i) Explain about the balancing of theodolite traverse survey is done and how it is plotted ii) Explain the Bowditch's Rule and Transit Rule w.r.t. balancing of theodolite survey			
Q.4		Attempt any **FOUR**			**(08)**
	a)	List any four accessories used in plane table survey	R	03	
	b)	What is orientation?	R	03	
	c)	For a 5^0 of curve having standard chord length 30m, find the radius.	A	04	
	d)	State the different types of curves with sketches.	R	04	
	e)	List any two uses of Digital level.	R	05	
	f)	State any two applications of GPS	R	06	
Q.5		Attempt any **FOUR**			**(16)**
	a)	Explain with neat sketch method of intersection in plane table survey.	U	03	
	b)	State & describe any four advantages of plane table survey.	U	03	
	c)	Calculate the ordinates at7.5m intervals for a circular curve given that the length of the long chord is 60m and the radius is 80m by method offsets from long chord.	A	04	
	d)	State & describe any four advantages of total station.	R	05	
	e)	State & describe the procedure of measuring vertical angle by micro optic theodolite.	U	05	
	f)	State the different types of Remote sensing system & explain any one.	U	06	
Q.6		Attempt any **FOUR**			**(16)**
	a)	Explain orientation by method of back sighting in plane table survey.	U	03	
	b)	Two straight meet at a chainage of 1800m with deflection angle of 55^0, the radius of circular curve is 80m, calculate. i) Tangent length ii)Length of long chord iii) Length of curve iv) Chainage of first tangent point.	A	04	
	c)	Explain the procedure of setting out a curve by Rankin's method of deflection angles.	U	04	
	d)	List an four component parts of total station with its uses.	R	05	
	e)	State & explain how data is retrieved though total station.	U	05	
	f)	State & describe any two application of remote sensing.	U	06	

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~~SUMMER~~/WINTER- 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - iv PROGRAM : DIPLOMA IN CE

COURSE CODE :-CEG403

COURSE NAME :-DESIGN AND DRAFTING OF STEEL STRUCTURE,

MAX. MARKS : **80** TIME : **03 Hrs** DATE :-27/5/2023

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	SECTION –II	R/U/A	Co CEG 403	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Sketch typical section of bolted plate girder.	U	Co4	2
	b)	Sketch angle purlin connection with roof and principal rafter.	U	Co6	2
	c)	List two advantages and two dis-advantages of tubular trusses.	R	Co6	2
	d)	Draw any Two built up sections used in beams	U	Co4	2
	e)	List any two types of trusses with their suitability.	R	Co6	2
	f)	Define shape factor as applicable to steel sections in plastic analysis.	R	Co6	2
Q.5		Attempt any **TWO:**			**16**
	a)	An industrial building has trusses for 16 m span, Trusses are spaced at 3.5 m c/c and rise of truss is 3 m. Calculate panel point load for loading case of live load and wind load using following data. 1. Coefficient of internal wind pressure= ± 0.20 2. Coefficient of external wind pressure= - 0.70 3. Design wind pressure = 1200 N/m^2 4. No of panels = 8	A	Co6	8
	b)	A simply supported beam has a span of 5 m and it carries a load of 35 kN at center. Check ISLB 600 is suitable for beam in shear and deflection. Properties of ISLB 600 are grade of steel fy =250 MPa..Assume the section to be plastic and compact. bf = 210 mm , tf = 15.5 mm , tw = 10.5 mm , r_1 = 20 mm , Z_{xx} = 2430 × 10^3 mm^3 , Z_p = 2798.56 × 10^3 mm^3 Ixx = 728 × 10^6 mm^4 (neglect self-weight of beam)	A	Co4	8
	c)	A column ISMB 300 carries an axial load of 1.6 MN. Design a slab base and concrete pedestal for the column. Take safe bearing capacity of soil is 195 KPa and M_{20} grade concrete. Take fy=250 Mpa and γ_{mo}= 1.1	A	Co5	8
Q.6		Attempt any **FOUR:**			**16**
	a)	Define laterally supported beam along with suitable sketch. State three method of providing laterally support to beam.	R	Co4	4
	b)	An ISMB 250 is used for simply supported beam of span 4.1 m span to carry a factored load of 30 kN/m. Check the section for shear only. Take fy=250 Mpa and tw = 6.4 mm	U	Co4	4
	c)	List any four differences between slab base and gusseted base.	R	Co5	4
	d)	Write any four selection criteria of type of roof truss. Also define pitch and slope of roof truss.	R	Co6	4

	e)	A industrial building has Pratt roof truss having 12 m span. Take G.I. roof covering weighing 160 N/m^2 , Eight panels slong along the tie member, pitch of roof = 1/6 , and weight of purlin 60 N/m^2 of plan area and self-weight of truss is 100 N/m^2 of plan area. Calculate panel point load for dead load.	A	Co6	4
	f)	Draw plan and cross section of gusseted base connection.and label.	U	Co5	4

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~~WINTER~~/SUMMER- 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - FOURTH PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG402

COURSE NAME :- DESIGN AND DRAFTING OF RCC STRUCTURES

MAX. MARKS : **80** TIME : **04 Hrs** DATE :-27 /5 / 23

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	SECTION -I	R/U/A	Co CEG 402	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	Define Limit state and state the types considered in RC Design.	R	1	
	b)	State any four types of loads with their respective IS codes.	R	1	
	c)	State any four conditions where doubly reinforced beam is necessary to use.	R	2	
	d)	Define under reinforced and over reinforced sections.	R	2	
	e)	State expression for L flanged beam with meaning of each term.	R	3	
	f)	State the conditions for enabling flanged beam flexure section.	R	3	
Q.2		Attempt any **TWO:**			**16**
	a)	i) State two advantages and two disadvantages of prestressed concrete. ii) Explain defects in structure due to earthquake.	R U	1 1	
	b)	Find limiting moment of resistance and steel required for a beam 300 × 550 mm effective, if concrete M20 and steel Fe 415 is used.	A	2	
	c)	Calculate depth and area of steel at mid span of a simply supported beam over a clear span 6 m. The beam is carrying all inclusive load 20 kN/m. Assume 300 mm bearings. Use M20 and Fe500. Assume b=d/2.	A	2	
Q.3		Attempt any **TWO:**			**16**
	a)	i) State any four ductile detailing provisions in IS 13920-2000. ii) Enlist any four components and corresponding functions of steel in RC water tank.	R R	1 1	
	b)	A simply supported beam of span 4 m carries a superimposed load of 50 kN/m. The size of beam is limited to 230 mm x 400 mm effective. Design the beam using concrete M20 and Fe 415 steel. Assume the cover of 40 mm to both reinforcements. Take fsc = 353 N/mm^2 and unit weight of R.C.C. as 25 kN/m^3.	A	2	
	c)	Calculate ultimate moment of resistance of T beam having flange width 1200 mm, depth of slab 100 mm, effective depth of beam 400 mm, width of web 230 mm. It is reinforced with steel of area 2000 mm^2 and Fe415 grade steel in M20 grade concrete.	A	3	

P.T.O.

GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

(An Autonomous Institute of Govt. Of Maharashtra)

~~WINTER~~/SUMMER- 20 23

EXAM SEAT NO. | | | | | | |

LEVEL : - FOURTH PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG402

COURSE NAME :- DESIGN & DRAFTING OF RCC STRUCTURE

MAX. MARKS : **80** TIME : **04 Hrs** DATE :- 27/ 5/ 23

QN	SQN	**SECTION –II**	R/U/A	Co	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	State the types of shear reinforcement used in RC construction.	U	4	
	b)	Comment on minimum and maximum steel in axially loaded RC column.	R	5	
	c)	Comment on field situations where torsion arises are need to be considered.	U	4	
	d)	Differentiate between one way and two way slabs with any two points.	U	5	
	e)	Draw the sketch of critical sections in column footing.	U	6	
	f)	Define bond length or development length as applied to steel bars in concrete.	U	4	
Q.5		Attempt any **FOUR:**			**16**
	a)	Find the development length for 20 mm Fe 500 bars in Tension and compression embedded in M25 concrete taking design bond stress as 1.4 MPa.	A	4	
	b)	Draw the typical reinforcemt detailing of dog legged stair flights slab with landing slab spanning logitudinally and label the diagram.	A	5	
	c)	A column section 250mm * 250mm is reinforced with 4 -16 mm Fe415 bars, find the ultimate strength of the section and also check for minimum eccentricity if the effective length is 3.0m.	A	6	
	d)	Design the beam for vertical stirrups for a s/s beam carrying UDL of 15kN/m incuding self weight over 4m span. Use 8 mm stirrups and M20 concrete and Fe415 bars .Assuming steel percentage as 1.25% , τc = 0.67 MPa and τc max = 2.8 MPa, Take b = 250mm and d =400mm.	A	4	
	e)	Design a s/s slab spanning between supports 230mm thick on either side with clear span 3. Take modification factor 1.4; LL 2 kN/sqm; Floor finish 1 kN/sqm. Adopt M20 and Fe415.	A	5	
	f)	Plot the reinforcement detailing of a chejja 1.5m span resting on beam 230mm by 400mm deep and label the steel details.	U	5	
Q.6		Attempt any **TWO**			**16**
	a)	Design a slab for a room having clear span 5m × 7m simply supported on walls 230mm thick, all around. Adopt M20 and Fe415 bars. Assume modification factor of 1.4 for steel. 1.4.αx =0.099 .αy =0.051.Plot reinforcement details showing bottom plan.	A	5	
	b)	State the assumptions and specifications of limit state of collapse – compression as per IS 456-2000.	A	6	
	c)	Design the square footing for a column carrying an ultimate axial load of 1000 kN resting on a soil of SBC 200 kN/sqm.Check the depth for BM only and sketch reinforcement details. Shear checks not required.Adopt M20 and Fe415 bars.	A	6	

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GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

(An Autonomous Institute of Govt. Of Maharashtra)

~~WINTER~~/SUMMER 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - ~~Fifth~~ Fourth PROGRAM : Civil Engineering

COURSE CODE :- CEG 401

COURSE NAME :- ANALYSIS OF STRUCTURE

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 26 /5 / 23

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	SECTION -I	R/U/A	Co	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	Define principal planes and stresses.	R	CEG 401-2	
	b)	State the angle of maximum shear with neat diagram.	U	CEG 401-2	
	c)	Calculate the core of section for a circular section of diameter d	A	CEG 401-3	
	d)	Draw stress distribution diagram for eccentric loading of column when 1)$\sigma_0 > \sigma_b$ (2) $\sigma_0 < \sigma_b$ (3) $\sigma_0 = \sigma_b$	U	CEG 401-3	
	e)	State types of columns with definitions.	R	CEG 401-4	
	f)	Draw sketches of perfect and imperfect frames	U	CEG 401-1	
Q.2		Attempt any **FOUR:**			**16**
	a)	A steel rod 5m long and 40 mm in diameter is used as a column with one end fixed and the other hinged. Determine the critical load the column can take by using Euler's formula. Take E = 2 x 10^5 N/mm^2	A	CEG 401-4	
	b)	A circular chimney having external diameter three times internal diameter and 8m height is subjected to wind pressure 1.5 kN/m^2. Weight of masonry is 20 kN/m^2. Calculate the external and internal diameter, so that no tension will develop in the masonry. Sketch the stress distribution. Coefficient of wind resistance is 0.6	A	CEG 401-3	
	c)	State the effective length of column for different end conditions with neat diagrams.	U	CEG 401-4	
	d)	Determine the forces in all members of the truss as shown in figure No.1using method of joints.	A	CEG 401-1	

	e)	A short column of hollow rectangular cross-section has external dimensions 2.4 m x 1.8 m and 20 mm thick. It carries a vertical load of 500 kN at an eccentricity of 30 mm from the geometric axis of the section bisecting the longer side. Find σ_{max} and σ_{min}.	A	CEG 401-3	
	f)	At a point in a strained material two planes at right angles to each other carry normal stress intensities of 80 N/mm^2 and 32 N/mm^2 both tensile. Planes also carry the shear stress of certain intensity. Calculate the intensity of shear stress if major principal stress is 96 N/mm^2 tensile. Calculate corresponding minor principal stress. Locate the position of planes carrying these stresses.	A	CEG 401-2	
Q.3		Attempt any **FOUR:**			**16**
	a)	At a point in a strained material, there are two mutually perpendicular stresses of 30 N/mm^2 and 70 N/mm^2 both tensile. They are accompanied by a shear stress of 20 N/mm^2. Determine 1) principal stresses, 2) position of principal planes and 3) maximum shear stress. Use Mohr's circle method.	A	CEG 401-2	
	b)	Using method of sections calculate forces in members BC, BH and IH (Refer figure No. 2)	A	CEG 401-1	
	c)	Using method of sections calculate forces in members AB, BE and DE (Refer figure No. 3)	A	CEG 401-1	
	d)	At a point in a strained material the principal stresses are 200 N/mm^2 tensile and 30 N/mm^2 compressive. Determine normal stress, shear stress and resultant stress on a plane inclined at 60^0 to the major principal plane. Also determine maximum shear stress.	A	CEG 401-2	
	e)	A square chimney of 3 m x 3 m outside dimensions and 0.75 m thick and 20 m high. A wind pressure is acting on it at an intensity of 1.2 kN/m^2. If the weight of masonry is 18 kN/m^3, find the stresses at the base.	A	CEG 401-3	
	f)	An ISHB 300 is used as a column having an effective length of 6 m. Calculate the maximum safe load it can carry with a factor of safety 3. Take following Rankine's constants. σ_c = 320 MPa, a = 1/7500. Properties of ISHB 300 : C.S. area 8025 mm^2, I_{xx} = 12.95 x 10^7 mm^4, I_{yy} = 2.25 x 10^7 mm^4	A	CEG 401-4	

P.T.O.

	Q N	Section II	U/ A		rks
Q.4		Attempt any **FOUR:**			**08**
	a)	State two advantages and disadvantages of fixed beam.	R	5	
	b)	Explain the principle of superposition.	U	5	
	c)	State the Clapeyron's theorem of three moments.	R	5	
	d)	State the nature of moment induced due to continuity in beam over the supports with the help of sketch..	U	5	
	e)	Define slope and deflection of beam.	R	6	
	f)	A simply supported beam of span 4 m carries a central point load of 19 kN. Find the maximum deflection of the beam, if $I_{XX} = 2\times10^8$ mm^4 and E = 200 GPa.	A	6	
Q.5		Attempt any **TWO:**			**16**
	a)	A fixed beam of span 4 m carries a concentrated load of 20kN at 1m from the left hand support, Calculate the fixed end moments and find the B.M. at the mid-span. Also draw S.F. and B.M. diagrams.	A	5	
	b)	A continuous beam ABC consists of two spans AB and BC of 6 m and 8 m respectively. The end supports are simple. The span AB carries a point load of 60 KN at 4 m from A. The BC carries a point load of 80 kN at 5 m from C. Draw S.F. and B.M. diagrams giving all important values. Use theorem of three moments.	A	5	
	c)	A simply supported beam AB of span 4 m carries a point load of 30 kN at 1 m from left support. Also 15 KN/m udl is acting on 2 m span from right support. Determine the slope at A (left support) and deflection at mid – span. Assume EI = 4000 $kN.m^2$.	U	6	
Q.6		Attempt any **TWO:**			**16**
	a)	A continuous beam ABC is supported at A, B and C. AB = 6m, BC = 5m. AB carries a udl of 30 kN/m and BC of 25 kN/m. Calculate the support moments and draw S.F. and B.M. diagram. Use moment distribution method.	U	5	
	b)	Solve Q.5 (b) by using moment distribution method.	U	5	
	c)	A simply supported beam of span 6 m carrying W kN at 4 m from left. Find the value W if deflection at the center is 20 mm. Take EI = 2000 $kN.m^2$. Use Macaulay's method.	A	6	

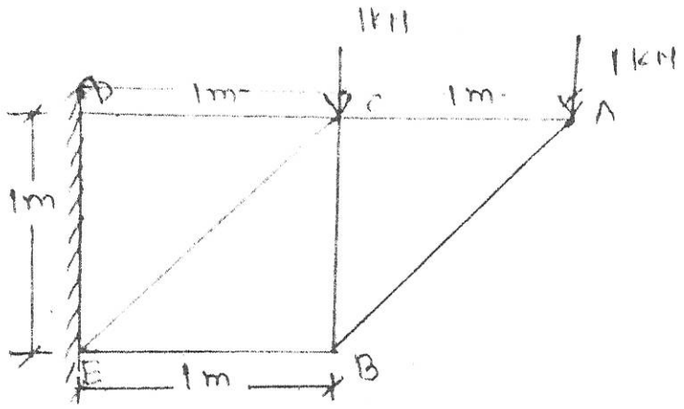

Figure No. 1

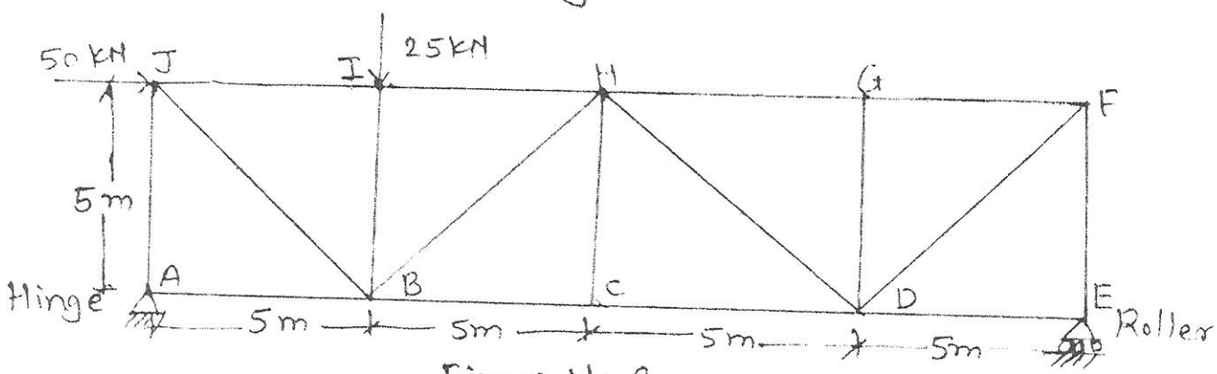

Figure No. 2

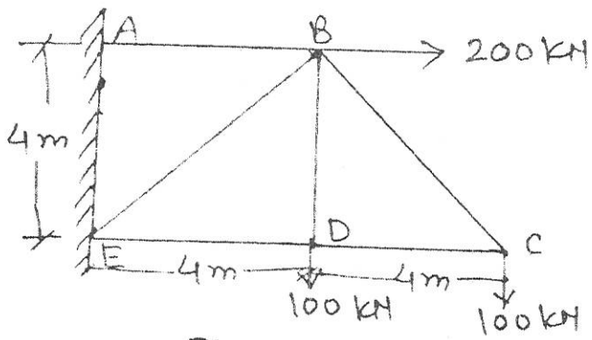

Figure No. 3

GOVERNMENT POLYTECHNIC, KOLHAPUR 416004.

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EVEN TERM END EXAM SUMMER -2023

EXAM SEAT NO. | | | | | | |

LEVEL: **THIRD** PROGRAM: **CIVIL ENGINEERING**

COURSE CODE: **CEG306/CEF306** COURSE NAME: **Hydraulics**

MAX. MARKS: **80** TIME: **3 HRS.** DATE: **26/05/2023**

Instruction :-

1) Answer must be written in main answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**-Question No, **SQN**-Sub-Question No, **R**- Remembering, **U**-Understanding, **A**-Application **CO**-Course outcome

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QN	SQN	QUESTION TEXT`	RUA	CO CEG107	Marks
Q.1	A	Attempt any **FOUR**			**(08)**
	a)	Define kinematics viscosity. State their units.	R	01	**02**
	b)	If the specific gravity of oil is 0.80, what is its specific weight N/m^3?	A	01	**02**
	c)	Write any two uses of pressure diagram for immersed surfaces.	R	02	**02**
	d)	Calculate pressure at a point 5.0m below the surface of mercury.	A	03	**02**
	e)	Define fluid discharge. State its unit.	R	03	**02**
	f)	Differentiate between steady flow & unsteady flow.	R	03	**02**
Q.2	A	Attempt any **FOUR**			**(16)**
	a)	Define – 1. Relative density 2. Surface tension 3. Viscosity 4. Compressibility.	R	01	**04**
	b)	A simple manometer is used to measure the pressure of oil (sp. Gr = 0.8) flowing in a pipeline. It's right limb is open to the atmosphere and left limb is connected to the pipe. The center of pipe is 90mm below the level of mercury. (sp. Gr. 13.6) in right limb. If the difference of mercury level in the two limb is 150mm find the pressure of oil in the pipe.	A	01	**04**
	c)	Define absolute pressure, gauge pressure, vacuum pressure & show the relationship.	U	02	**04**
	d)	A concrete dam of rectangular section 15m high and 4m wide has water standing 3m below the top find i) Water pressure on 1m length of dam ii) Height of center of pressure above base iii) The point of which the resultant cuts the base. Assume weight of concrete as $24KN/m^3$	A	02	**04**
	e)	State the Bernoulli's theorem. Write any four assumptions & any four limitations of it.	U	03	**04**
	f)	Oil flows through a pipeline which gradually reduces from 450mm diameter at A to 300mm dia at B and then forks, one branch being 150mm diameter discharging at C and the other branch 225mm diameter discharge at D. If the velocity at A is 2m/sec and velocity at 'D' is 4m/sec, what will be the discharge at C & D and velocities at B & C? **(Refer fig 1)**	A	03	**04**

P.T.O.

Q.3		Attempt any **FOUR**			**(16)**
	a)	A liquid weights 25KN and occupies $3.75m^3$ find its specific weight, mass density, specific gravity & specific volume.	U	01	**04**
	b)	A vertical sided 1.5m high tank is square in plan shoes each side is 1.20m long. Tank contains oil of sp. Fr 0.8 standing to a depth of 50cm floating on 1m deep water. Find a) Total pressure on one side of tank. b) Height of center of pressure above base.	A	02	**04**
	c)	An isosceles triangle lamina of base 3m & altitude 3m is immersed vertically in an oil of sp. Gravity 0.80 with its axis of symmetry horizontal. If depth of oil on the axis of symmetry is 5m. Locate the centre of pressure & calculate the total pressure on the lamina.	A	02	**04**
	d)	i) Define pressure diagram. State any four uses of pressure diagram (2 marks) ii) Explain variation of pressure in horizontal & vertical direction in static liquid. (2 marks)	A/ U	02	**04**
	e)	Discuss the term Reynolds's number with its expression. (2 marks) Write any four applications of Reynolds's number (2 marks)	U	03	**04**
	f)	Water is flowing through a pipe having diameter 20cm & 10cm at sections A & B respectively. If the discharge passes through pipe is 35 lit/sec. Section A is 6m and section B is 4m above datum. If pressure at A is $392KN/m^2$, calculate pressure head at B.	U	03	**04**
Q.4		Attempt any **FOUR**			**(08)**
	a)	What is an equivalent pipe?	R	04	**02**
	b)	State the use of Nomogram.	U	04	**02**
	c)	State the use of venturimeter.	U	04	**02**
	d)	Define i) hydraulics radius ii) Wetted area	R	05	**02**
	e)	Differentiate any four points between notch & weir.	U	05	**02**
	f)	Define the term reciprocating pump	R	06	**02**
Q.5		Attempt any **FOUR**			**(16)**
	a)	The diameter of horizontal pipe suddenly changes from 20cm to 25cm. the discharge from the pipe is 350 lit per sec. calculate head loss when - i) water flows from smaller dia. pipe to large dia. pipe. ii) flow is reversed with same discharge.	A	04	**04**
	b)	Define HGL & TEL using suitable sketch.	R	04	**04**
	c)	Find the loss of head due to friction in a pipe of 1m diameter & 15 km long. The velocity of water in pipe is 1m/s. Take coefficient of friction as 0.005	A	04	**04**
	d)	List the condition for most economical section for rectangular section & trapezoidal section.	U	05	**04**
	e)	A trapezoidal channel having side slopes of 1:1 and bed slope of 1 in 1200 is required to carry a discharge of $180m^3/sec$ find the dimensions of the channel for minimum cross section. Take chezy's constant as 50.	A	05	**04**

P.T.O.

	f)	Calculate H.P. of power required for the centrifugal pump to work under the following conditions. 1) Suction head = 8m 2) Delivery head = 22m 3) Dia. of GI suction & delivery pipe = 100mm 4) Length of delivery pipe = 36m 5) Efficiency of pump = 75% 6) Discharge required = $0.05m^3/sec$ 7) Losses at foot valve, bends. Pipe delivery valve may be taken as 10% of static head.	A	06	**04**
Q.6		Attempt any **FOUR**			**(16)**
	a)	Define Cc, Cv, C_d and explain the relation between them.	U	04	**04**
	b)	Calculate the loss of head per km length of new mild steel pipe having 300mm diameter carrying a discharge of 300 lpm.	A	04	**04**
	c)	Explain the working of cup type current meter with a neat sketch.	U	05	**04**
	d)	Define hydraulic jump explain clearly how it is formed.	U	05	**04**
	e)	Discuss any four criteria that you will considered for selection of type of pump.	U	06	**04**
	f)	A triangular notch of angle 120^0 is used to measure the discharge of pump. Determine the head over the notch, it discharge is 1200 lit/min. assume c_d=0.6			

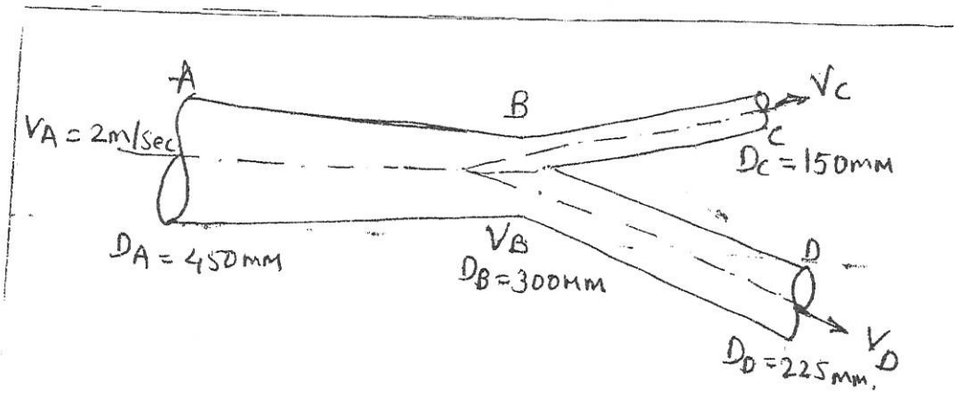

Fig. 1.

GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

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SUMMER/~~WINTER~~- 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - FIFTH PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG504

COURSE NAME :- CONTRACTS AND ACCOUNTS

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 25/04/2023

QN	SQN	SECTION –II	R/ U/ A	Co	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Enlist and explain the source of finance.	R	CEG504-4	
	b)	Define the term petty advance.	R	CEG504-5	
	c)	State the use of imprest cash.	R	CEG504-5	
	d)	Define the term Depreciation and Obsolescence.	R	CEG504-6	
	e)	Enlist the types of outgoings.	R	CEG504-6	
	f)	State the methods of computing capitalized value.	R	CEG504-6	
Q.5		Attempt any **FOUR:**			**16**
	a)	Describe in detail royalty tax and GST.	U	CEG504-4	
	b)	State and explain functions of financial management.	R	CEG504-4	
	c)	Define budget and explain the various types of budgets.		CEG504-4	
	d)	Explain the term i)Retention money ii) Mobilization advance.	U	CEG504-5	
	e)	Define the term muster roll. State the guidelines for preparing muster Roll.	U	CEG504-5	
	f)	Differentiate between running bill and final bill	U	CEG504-5	
Q.6		Attempt any **FOUR:**			**16**
	a)	Explain the term cost, price, value.	U	CEG504-6	
	b)	Describe the use of valuation Tables.	U	CEG504-6	
	c)	Define the term i) Market Value, ii) Sentimental Value, iii) Year Purchase, iv) Capitalized Value	R	CEG504-6	
	d)	Explain the procedure of fixation of rent adopted by PWD.	U	CEG504-6	
	e)	Suggest suitable rent for a property from following data 1. Cost of land =2500000/- 2. Cost of building = 4500000/- 3. Expected net return on land cost =5% 4. Expected net return on building Cost =8% 5. Outgoings = 30% of gross income.	A	CEG504-6	
	f)	Calculate capitalized value of a property from following data (Assume suitable data if required) 1. Rent inclusive of all taxes = Rs. 1000 per month 2. Outgoings 25% of gross rent 3. Net yield expected from property = 9%	A	CEG504-6	

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GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

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SUMMER / ~~WINTER~~ - 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - FIFTH PROGRAM : Diploma in Civil Engineering

COURSE CODE :- CEG 504

COURSE NAME :- CONTRACTS & ACCOUNTS

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 25/05/2023

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

Q. N.	S. QN	**SECTION -I**	R/U /A	CO	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	List the documents required for technical sanction.	R	CEG504-01	
	b)	Define –major work and minor work.	R	CEG504-01	
	c)	State the requirement of valid contracts.	R	CEG504-02	
	d)	Enlist the various conditions of contracts.	R	CEG504-02	
	e)	Give the classification of tender.	R	CEG504-03	
	f)	Define- tender and tender notice.	R	CEG504-03	
Q.2		Attempt any **FOUR:**			**16**
	a)	Explain day work method with example.	U	CEG504-01	
	b)	Explain the procedure of registration of contractor adopted in PWD.	U	CEG504-01	
	c)	Explain cost plus percentage rate contract.	U	CEG504-02	
	d)	Write the qualities of Arbitrator and power of Arbitrator.	R	CEG504-02	
	e)	Draft a tender notice for construction of boy's hostel to Government polytechnic Kolhapur of estimated cost 2 crores	A	CEG-504-03	
	f)	State any four reasons of rejection of lowest tender.	R	CEG504-03	
Q.3		Attempt any **FOUR:**			**16**
	a)	Explain in brief the difference types of works in PWD department.	U	CEG504-01	
	b)	State the responsibility of junior engineer in PWD work.	R	CEG504-01	
	c)	Explain lump sum contract with their advantages & disadvantages.	U	CEG-504-02	
	d)	Enlist important condition of contract and explain any one.	R	CEG504-02	
	e)	Give the meaning of security deposit and earnest money	R	CEG504-03	
	f)	Explain scrutiny of tender and acceptance of tender	U	CEG504-03	

P.T.O.

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EVEN TERM END EXAM SUMMER -2023

EXAM SEAT NO. | | | | | | |

LEVEL: **THIRD**
COURSE CODE: **CEG303/CEF303**
MAX. MARKS: **80**

PROGRAM: **CIVIL ENGINEERING**
COURSE NAME: **Building Drawing**
TIME: **4 HRS.** DATE: **24 /05/2023**

Instruction :-
1) Answer must be written in main answer book provided, (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**-Question No, **SQN**-Sub-Question No, **R**- Remembering, **U**-Understanding, **A**-Application **CO**-Course outcome

QN	SQN	QUESTION TEXT`	RUA	CO CEG 303	Marks
Q.1		Attempt any **FOUR**			**(08)**
	a)	Write any two units required for post office building.	R	4	
	b)	Define FSI	R	2	
	c)	Explain in brief the term Elegance.	U	3	
	d)	Write the minimum parking area required for various vehicles.	R	4	
	e)	State the relation between Rise & tread of stair case.	R	3	
	f)	Enlist any four plan sanctioned authorities.	R	2	
Q.2		Attempt any **FOUR**			**(16)**
	a)	Draw various types of line as per IS 962:1989	U	1	
	b)	Enlist type of perspective and explain any one type with its application.	R	5	
	c)	State the role of owner and contractor in building construction.	U	2	
	d)	Define the term Aspect and explain the term privacy.	R	3	
	e)	Explain necessity and principles of perspective drawing.	U	5	
	f)	Enlist the units required for primary school building along with minimum sizes.	A	4	
Q.3		Attempt any **TWO**			**(16)**
	a)	i) Enlist documents required for plan sanctioning of building.			
		ii) Draw the symbols for stone work and concrete as per IS 962:1989			
	b)	Draw 2 BHK line plan of residential building by assuming appropriate sizes, using principles of planning.			
	c)	Draw two point perspective of the following figure. Assume eye level as 1.5 Retain all construction lines. (Figure attached)			

P.T.O.

QN	SQN	QUESTION TEXT	RUA	CO CEG 303	Marks 40
Q.4		Fig. shows line plan of Residential building draw to a scale 1:50 or any other suitable scale for following views for the given data.	A	6	
	a	Detailed plan.			**15**
	b	Front Elevation.			**06**
	c	Section A – A^1 Or Section B – B^1			**12** **12**
	d	Schedule of doors & windows.			**06**
	e	North Direction.			**01**
		Given Data :- i) Structure is load bearing single storey building ii) P.C.C. (1:4:8) below foundation of 1.0m width and 0.15 m thick iii) Hard Strata is available at 1.2m below G.L. iv) U.C.R. Masonry in C.M. (1:5) for foundation of 0.8m width v) U.C.R. masonry in C.M. (1:5) for plinth of 0.45m width and 0.6m height. vi) B.B. Masonry for super structure of 0.23 External wall and 0.15 internal wall vii) Floor to celling height 3.0m viii) R.C.C. slab ($1:1\frac{1}{2}:3$) of 0.15m thick provided as a roof ix) Assume size and types of doors & windows as your own. x) Assume any suitable data if required. xi) Stair case flight width 1.0m width, Rise 150m & treude 300mm			

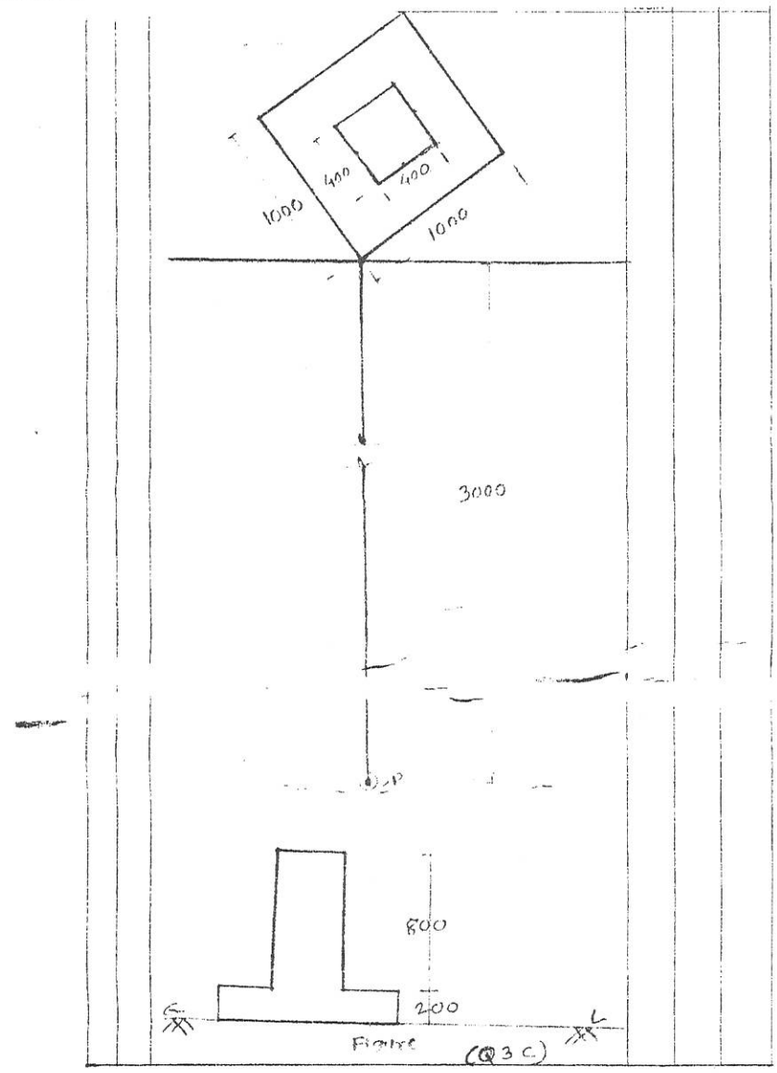
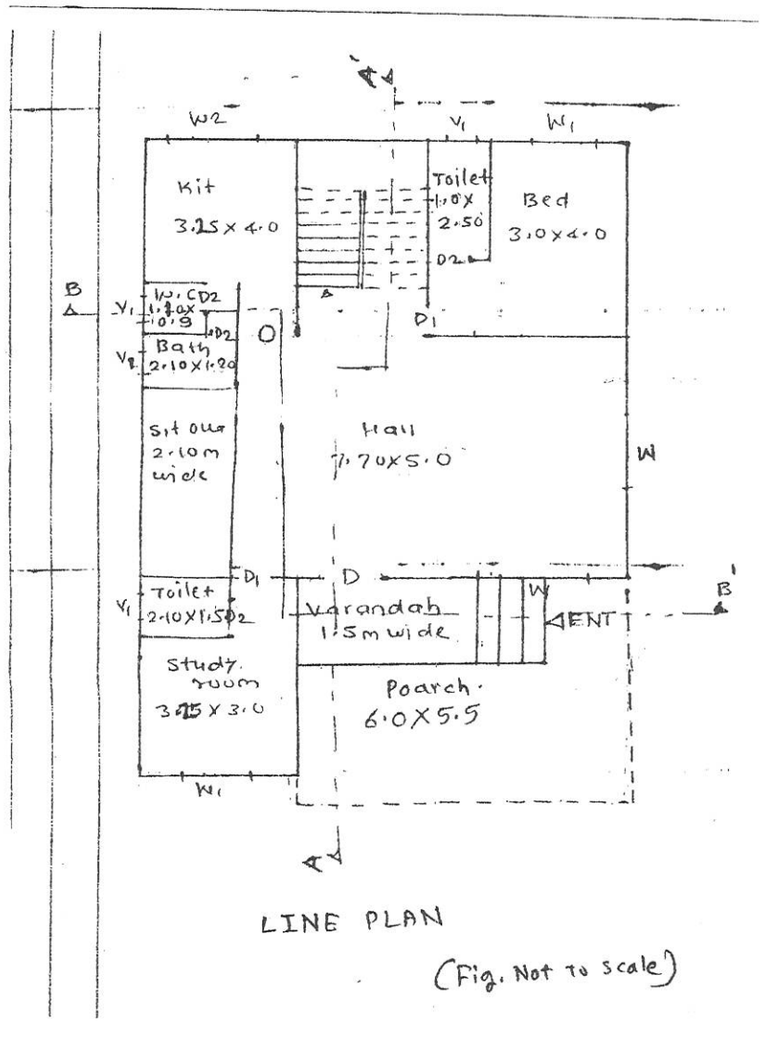


Figure (Q3 c)



LINE PLAN

(Fig. Not to scale)

GOVERNMENT POLYTECHNIC, KOLHAPUR 416004.

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EVEN TERM END EXAM SUMMER -2023

EXAM SEAT NO. | | | | | | |

LEVEL: **THIRD** PROGRAM: **CIVIL ENGINEERING**

COURSE CODE: **CEG305/CEF305**

COURSE NAME: **Soil Mechanics & foundation Engineering**

MAX. MARKS: **80** TIME: **3 HRS.** DATE: **06/06/2023**

Instruction :-

1) Answer must be written in main answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**-Question No, **SQN**-Sub-Question No, **R**- Remembering, **U**-Understanding, **A**-Application **CO**-Course outcome

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QN	SQN	QUESTION TEXT`	RUA	CO CEG 305	Marks
Q.1	A	Attempt any **FOUR**			**(08)**
	a)	Define soil as per Indian standard.	R	01	
	b)	State the different stages of consistency of soil.	R	01	
	c)	Define uniformity coefficient and coefficient of curvature.	R	01	
	d)	State Darcy's law.	R	02	
	e)	Define permeability of soil.	R	02	
	f)	Define cohesion and internal friction of soil.	R	03	
Q.2	A	Attempt any **TWO**			**(16)**
	a)	Explain the various field applications of soil mechanics in details.	U	01	
	b)	Explain the procedure to determine specific gravity of soil.	U	01	
	c)	Explain three phase system of soil with neat sketch.	U	01	
	d)	Calculate coefficient of uniformity and coefficient of curvature for a soil sample with D_{10}=0.430mm, D_{30}=0.790mm, and D_{60}=1.300mm.	A	01	
	e)	Sate any four characteristics of flow net.	R	02	
	f)	Explain capillary phenomenon in soil.	U	02	
Q.3		Attempt any **FOUR**			**(16)**
	a)	Calculate dry density, saturated density, submerged density & bulk density of soil at 15% water content, it G = 2.6 & e = 1.0	A	01	
	b)	Explain the procedure for determination of plastic limit of soil.	U	01	
	c)	State any four factors which affect the shear strength of soil.	U	03	
	d)	Explain direct shear test with neat diagram.	U	03	
	e)	State any four methods of soil stabilization and explain any one in detail.	U	03	
	f)	Explain in brief significance of standard proctor test.	U	03	

P.T.O.

GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

(An Autonomous Institute of Govt. Of Maharashtra)

WINTER/SUMMER- 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - III PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG 305 / CEF305

COURSE NAME :- SOLI MECHANICS AND FOUNDATION ENGINEERING

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 06/06/ **23**

QN	SQN	**SECTION –II**	R/U/A	Co	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Differentiate between disturbed and undisturbed soil samples.	U	4	
	b)	Enlist any four structures subjected to earth pressure in field.	R	4	
	c)	Define allowable bearing capacity and net bearing capacity.	R	5	
	d)	Enlist field methods to determine bearing capacity of soil.	R	5	
	e)	Enlist any four types of shallow foundation with neat sketch.	R	5	
	f)	Define caisson & pier	R	5	
Q.5		Attempt any **FOUR:**			**16**
	a)	Explain effect of soil chemical on foundation and state how to protect from it.	U	6	
	b)	Enlist any two types of cofferdam and explain any one of it.	R	6	
	c)	Explain meaning of term vibration isolation	U	6	
	d)	Explain geophysical seismic method of soil investigations	U	4	
	e)	Explain any four factors affecting bearing capacity of soil.	R	5	
	f)	State function of Tie back with a neat labelled diagram	U	6	
Q.6		Attempt any **FOUR:**			**16**
	a)	State criteria for deciding the location and number of test pit and bore holes as per is 1892-979	R	4	
	b)	Explain any two methods of de-watering while foundation construction.	U	6	
	c)	Explain standard penetration test.	U	5	
	d)	Explain any two method to improve bearing capacity of soil.	U	5	
	e)	State any four factors deciding depth of the foundation on sloping ground.	R	5	
	f)	Enlist any two classification of pile foundation according to their i)mode of transferring load transferring ii)based on use	R	5	

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GOVERNMENT POLYTECHNIC, KOLHAPUR 416004.

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EVEN TERM END EXAM SUMMER -2023

EXAM SEAT NO. | | | | | | |

LEVEL: **THIRD** PROGRAM: **CIVIL ENGINEERING**

COURSE CODE: **CEG307/CEF307** COURSE NAME: **Mechanics of Structures**

MAX. MARKS: **80** TIME: **3 HRS.** DATE: **08/06/2023**

Instruction :-

1) Answer must be written in main answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**-Question No, **SQN**-Sub-Question No, **R**- Remembering, **U**-Understanding, **A**-Application **CO**-Course outcome

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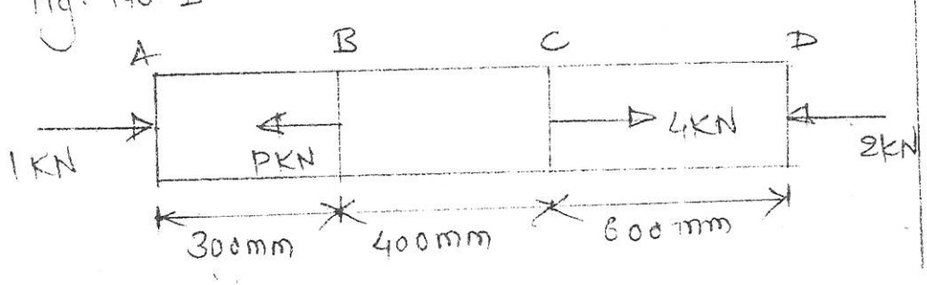
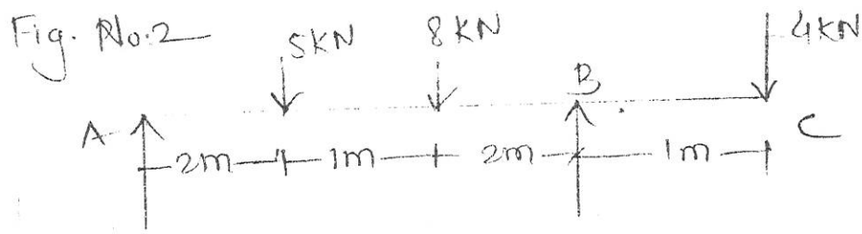
QN	SQN	QUESTION TEXT`	RUA	CO CEG 307	Marks
Q.1	A	Attempt any **FOUR**			**(08)**
	a)	State any two basic requirements of structures.	R	01	
	b)	Write suitability of concrete and steel as structural material.	R	01	
	c)	Define Poisson's ratio.	R	02	
	d)	Differentiate between Ductile & Brittle material.	R	02	
	e)	Define bulk modulus.	R	02	
	f)	Explain impact loading with proper field example.	R	02	
Q.2	A	Attempt any **FOUR**			**(16)**
	a)	Explain with sketch the basic structural action i) Tension ii) Compression iii) Flexure iv) shear	R	01	
	b)	Draw stress-strain curve for mild steel under tensile loading. Show silent points on the graph.	U	02	
	c)	A bar of uniform cross sectional area $100mm^2$ is subjected to axial force as shown in fig.1. Calculate the net change in length of the bar. Take $E=2x10^5$ N/mm2.			
Q.2	c)	Fig. No. 1  	A	02	
	d)	An axial pull of 100kN is applied gradually to a steel rod of 1m long and 20mm diameter in cross-section. Calculate magnitude of stress developed in rod. Also calculate stress when same load is applied on suddenly. Given E=200GPa.	A	02	
	e)	A steel tube with 40mm inside diameter & 4mm thickness is filled with concrete. Determine load shared by each material due to axial thrust of 60kN. Take $Es = 210 \times 10^3$ N/mm^2 $Ec = 14 \times 10^3$ N/mm^2	A	02	
	f)	Draw SFD and BMD for cantilever beam of span 'ℓ'm carrying UDL of w per unit length over the entire span.	A	03	

Q.3		Attempt any **FOUR**			**(16)**
	a)	A circular rod of 100mm diameter and 600mm long is subjected to a tensile load of 900 kN. Determine bulk modulus if Poisson's ratio is 0.3. If modulus of elasticity is 210 kN/mm^2. Find linear strain.	A	02	
	b)	Define shear force and Bending moment and give its sign convention.	U	03	
	c)	Draw SFD and BMD for cantilever beam of 6m length, fixed at point 'A' and free at point 'B'. It carries a point load of 10kN at free end and UDL of 5 kN/m over entire span of the beam.	A	03	
	d)	Draw S.F.D. for the beam as shown in fig.2.	A	03	
	e)	Draw B.M.D. for the beam as shown in fig.2.			
Q3 e) Q.3 d & e		Fig. No.2 	A	03	
	f)	A simply supported beam 6m spam carries a clockwise couple of 10 kNm @ 4m from LHS. Construct SFD & BMD.	A	03	
QN	**SQN**	**QUESTION TEXT`**	**RUA**	**CO CEG 307**	**Marks**
Q.4		Attempt any **FOUR**			**(08)**
	a)	State shear stress equation with meaning of each term.	U	02	
	b)	The average shear stress across a certain rectangular section is 200 N/mm^2. Calculate maximum shear stress at this section.	A	02	
	c)	Differentiate between gradually applied load and suddenly applied load.	U	06	
	d)	Define strain energy and resilience.	R	06	
	e)	Draw bending stress distribution diagram for a rectangular cross section for simply supported beam.	U	5.1	
	f)	State M.I. of a semicircular section about xx and yy axis.	R	04	

Q.5		Attempt any **FOUR**			**(16)**
	a)	Calculate maximum stress induced in a steel flat 150mm wide & 12mm thick, if it is bent into a circular arc of 12000mm radius. $E=2x10^5$ N/mm^2.	A	5.1	
	b)	A cantilever beam of span 3m is subjected to udℓ of 20kN/m over entire span. Determine bending stress if cross-section of the beam is 200x400mm.	A	5.1	
	c)	A circular section of 100mm diameter is subjected to a shear force of 3kN when used as a beam. Determine the maximum shear stress and the minimum shear stress induced. Sketch the stress distribution diagram.	A	5.2	
	d)	A disc having weight 6000N falls through a height on to a collar attached to a rod of length 3000mm and cross sectional area 600mm^2. Determine the height of fall if maximum instantaneous stress is 130 MPa.	A	06	
	e)	A rectangular beam 60mm wide and 160 mm deep has a span 5m. It carries a concentrated load of 40 kN at midspan. Determine maximum shear stress induced in the section. Draw stress distribution diagram.	A	5.2	
	f)	Determine the radius of gyration about centroidal horizontal axis for a rectangle of dimensions 40mm x 80mm.	A	04	
Q.6		Attempt any **FOUR**			**(16)**
	a)	If polar M.I. of a circular section is 200 mm^4. Then calculate M.I. of the section about any of the centroidal axis.	A	04	
	b)	Determine M.I. of the section shown in fig. 1 about horizontal centroidal axis.	A	04	
	c)	Determine M.I. of a T-section with flange 250 mm x 25 mm, web 150mm x 25 mm about an axis passing through c.g. of the section and parallel to x – axis.	A	04	
	d)	A steel rod 20mm in diameter is 200mm long. It is subjected to an axial pull of 40kN. Calculate the stress induced in the rod if the load is applied. I) Gradually ii) Suddenly.	A	06	
	e)	Draw shear stress distribution diagrams for following sections. i) T-section ii) Inverted T-section iii) Channel section iv) Symmetrical I-section.	U	5.2	
	f)	Determine the bending stress at a distance 25 mm below top edge of rectangular section 80mm x 240mm, If maximum bending moment is 5 kNm and Ixx = 9.216 x 10^{7}mm^4.	A	5.1	

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EVEN TERM END EXAM SUMMER -2023

EXAM SEAT NO. | | | | | | |

LEVEL : - **FOURTH** PROGRAM : **CIVIL ENGINEERING**

COURSE CODE :- **CEF407**

COURSE NAME **BUILDING SERVICES**

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- **07/ 06 / 2023**

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	SECTION -I	R/U/A	Co CEF 407	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	Define i) Sewer Air supply pipes. ii) Vent pipe.	R	1	
	b)	Enlist material used for water proofing.	R	2	
	c)	Define Anti-termite Treatment.	R	4	
	d)	Enlist methods of Damp-proofing.	R	3	
	e)	State any four fittings used for efficient collection and removal at waste water to house drain.	U	1	
	f)	Define water proofing.	R	2	
Q.2		Attempt any **FOUR:**			**16**
	a)	Explain the procedure of water-proofing for Bathroom.	U	2	
	b)	Enlist different types of valves and explain any one in brief with neat sketch.	A	1	
	c)	Write any eight effects of Dampness.	R	3	
	d)	Explain four different systems at plumbing for housing drainage.	U	1	
	e)	Explain Testing of pipes.	U	1	
	f)	Give classification of pipes according to material and write its suitability.	U	1	
Q.3		Attempt any **FOUR:**			**16**
	a)	Explain in detail the Damp proofing in Basement.	A	3	
	b)	Explain precautions to be taken while water proofing.	U	2	
	c)	Explain with neat sketch the Syphonic action in plumbing.	U	1	
	d)	Draw neat sketch of water proofing for W/C (water closet) and explain in brief.	A	2	
	e)	Explain in brief the typical soil treatment procedure against termites.	U	4	
	f)	Explain procedure of fitting G.I. pipe and C.I. pipe.	U	1	

P.T.O.

QN	SQN	SECTION –II	R/U/A	Co CEF 407	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Define Lift and enlist its basic parts.	R	5	
	b)	List any four types of Lamps.	R	6	
	c)	Differentiate any two points between open and concealed wiring.	R	6	
	d)	State the basic principle of Air conditioning.	R	7	
	e)	List any two advantages of split Air condition system.	U	7	
	f)	Define rain water harvesting.	R	8	
Q.5		Attempt any **FOUR:**			**16**
	a)	State the various types of Lift entrance and explain any one in detail.	U	5	
	b)	Calculate the power requirement of 1BHK.(assume suitable data)	A	6	
	c)	Describe in detail the concept of emergency power supply.	U	6	
	d)	List any four causes of fire due to Electricity and Suggest suitable safety measures for controlling it.	A	6	
	e)	Explain window unit a.c. with neat sketch.	U	7	
	f)	Draw general layout of ducting and distribution for multistoraged building.	R	7	
Q.6		Attempt any **FOUR:**			**16**
	a)	State the various types of lift operations and describe any one.	U	5	
	b)	Describe any four precautions to avoid electrical accidents.	R	6	
	c)	State and describe the concept of Earthing.	U	6	
	d)	State and describe any two methods of ground water recharging.	R	8	
	e)	Explain any one ducting and distribution system with neat sketch.	U	8	
	f)	Write a short note on air cooling.	U	7	

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GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

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WINTER/SUMMER-2023

EXAM SEAT NO. | | | | | | |

LEVEL : - THREE PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG 302 / CEF302

COURSE NAME :- BUILDING CONSTRUCTION

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 09/05/23

QN	SQN	SECTION –II	R/U/A	CO CEG 302	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Define stair and write its suitability.	R	04	
	b)	Enlist any two types of stair-case and draw line sketch of each.	R	04	
	c)	Define skirting.	R	05	
	d)	Give any four requirements of good roof.	R	05	
	e)	State the importance of water proofing work.	U	06	
	f)	State any four causes of cracks in buildings.	U	06	
Q.5		Attempt any **FOUR:**			**16**
	a)	State the requirement of good staircase.	U	04	
	b)	Explain the procedure to construct tremix floor.	R	05	
	c)	State the precautions to be taken while plastering.	U	05	
	d)	Draw a neat labelled c/s of pitched roof showing all component parts.	A	05	
	e)	Explain the term termite proofing.	R	06	
	f)	Explain with neat sketch of formwork used for column.	A	06	
Q.6		Attempt any **FOUR:**			**16**
	a)	Explain with neat sketch dog legged stair.	A	04	
	b)	Explain the step-by-step procedure for application of internal cement mortar plaster work.	R	05	
	c)	Enlist any four types of external finishes. Explain any one.	R	05	
	d)	State the requirements of good formwork.	R	06	
	e)	Explain the procedure of water proofing work for RCC slab.	R	06	
	f)	State the uses of epoxy resins. Explain their use in filling of cracks.	U	06	

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GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

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WINTER/SUMMER- 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - THREE PROGRAM : **CIVIL ENGINEERING**

COURSE CODE :- **CEG302 /CEF302**

COURSE NAME :- **BUILDING CONSTRUCTION**

MAX. MARKS : 80 TIME : 03 Hrs DATE :- 09 /06 / 23

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	SECTION -I	R/U/A	Co	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	State any two functions of Door.	R	1	
	b)	What is Framed Structure?	U	1	
	c)	Enlist any four components of Superstructure.	R	1	
	d)	Enlist component parts of Scaffolding.	R	2B	
	e)	What is meant by Composite masonry	U	2B	
	f)	Enlist any four types of Bonds in brick work	R	2B	
Q.2		Attempt any **FOUR:**			**16**
	a)	Explain Conventional and Standard bricks, also draw it's sketches	A	1	
	b)	Explain requirements of Good foundation.	R	2A	
	c)	Draw sketch of Grillage foundation, and when it is used/provided	A	2A	
	d)	Define Foundation, and explain purpose of foundation.	U	2A	
	e)	Give the comparison between Stone masonry and Brick masonry.	U	2B	
	f)	Enlist any four types of Hinges and draw sketch of any one hinge.	R	3	
Q.3		Attempt any **FOUR:**			**16**
	a)	Write the functions of any four of the following: i) Lintel ii) Chajja iii) Wall iv) Window	A	1	
	b)	Write precautions to be taken while constructing foundation in black cotton soils.	U	2A	
	c)	Explain requirements of good stone masonry.	A	2B	
	d)	Explain in detail pile foundation with neat sketch.	A	2A	
	e)	What are the requirements of good bond and sketch plan of Flemish Bond	A	2B	
	f)	Explain Collapsible door with neat sketch, Also give suitability where it is provided	A	3	

P.T.O.

GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

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WINTER/SUMMER- 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - V PROGRAM : Civil Engineering

COURSE CODE :- CEG509 / CEF510

COURSE NAME :- SOLID WASTE MANAGEMENT

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 06/06/ **23**

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	**SECTION -I**	R/U/A	Co CEG 509	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	Enlist the chemical characteristics of Solid Waste.	U	1	
	b)	Enlist collection methods of Municipal Solid Waste.	R	2	
	c)	Define Biomedical waste.	R	3	
	d)	Write the tools & equipment's used for storage of Municipal Solid Waste.	U	2	
	e)	Define solid waste.	R	1	
	f)	Write any four sources of Biomedical waste.	U	3	
Q.2		Attempt any **FOUR:**			**16**
	a)	Mention the health problems arising while handling solid waste and its precautions.	A	3	
	b)	Enlist factors affecting solid waste Generation and explain any two in detail.	R	1	
	c)	State the colour code applied for storage of Municipal solid waste and write importance of segregations of waste.	A	2	
	d)	Explain solid waste management hierarchy with neat sketch and mention the present situation in India.	A	1	
	e)	State the importance of public participation in solid waste management.	A	3	
	f)	Explain the organization pattern of solid waste management.	R	2	
Q.3		Attempt any **FOUR:**			**16**
	a)	Discuss the methods of disposal of Bio-medical waste and explain any one in detail.	U	3	
	b)	Define Transfer Station and state its necessity.	U	2	
	c)	Explain the following types of wastes with an example of each: (i) Agricultural waste (ii) E- waste (iii) Hazardous waste (iv)Domestic waste	U	1	
	d)	Write the storage system of Hospital waste	U	3	
	e)	Enlist the vehicles used for transportation of solid waste with their capacity.	A	2	
	f)	Write the classification of hospital waste and precautions taken in transportation of hospital waste	R	3	

P.T.O.

GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

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WINTER/SUMMER- 20

EXAM SEAT NO. | | | | | | |

LEVEL : - FIFTH PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG 509 / CEF510

COURSE NAME :- SOLID WASTE MANAGEMENT

MAX. MARKS : **80** TIME : **03 Hrs** DATE :-06/06/23

QN	SQN	**SECTION –II**	R/U/A	CEG 509	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	What do you mean by Leachate?	U	4	
	b)	State any two ways to control contamination of ground water at landfill site.	A	4	
	c)	Enlist by-products of pyrolysis.	R	5	
	d)	Define Industrial waste.	R	5	
	e)	Define compostible plastics waste.	R	6	
	f)	State any four characteristics of Hazardous waste as per Hazardous Waste Management Rules 2016	R	6	
Q.5		Attempt any **FOUR:**			**16**
	a)	Describe the factors to be considered while selecting site for sanitary landfilling.	A	4	
	b)	Explain the factors governing composting process.	R	4	
	c)	State any four benefits of composting.	R	4	
	d)	State the advantages and disadvantages of Incineration process.	R	5	
	e)	Explain the process of disposal of organic waste produced during fruit processing.	U	5	
	f)	Explain responsibility of local body as per Plastic waste management rules 2016.	R	6	
Q.6		Attempt any **FOUR:**			**16**
	a)	State types of landfilling. Explain any one in detail.	R	04	
	b)	Explain the process of Vermicomposting.	U	04	
	c)	Explain various methods of disposal of e waste.	R	05	
	d)	Enlist types of incinerators and explain any one in detail.	R	05	
	e)	How are the following industrial waste recycled or reused? i) Flyash ii) Red Mud iii) Blast furnace slag iv) Pulp and paper	U	05	
	f)	Explain standards for deep burial of Biomedical waste as per Biomedical Waste Management rules 2016.	R	06	

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GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

(An Autonomous Institute of Govt. Of Maharashtra)

WINTER/SUMMER- 2023

EXAM. SEAT NO. | | | | | | |

LEVEL : - FIFTH PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG505 / CEF506

COURSE NAME :- ENVIRONMENTAL ENGINEERING

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- **05/06/ 23**

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

Q.N	SQN	SECTION -I	R/U/A	CO	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	Enlist any four types of Intake structures provided. depending upon the type of source of water.	R	CEG505-1	
	b)	State any four types of water demand to be considered while designing any water supply scheme.	R	CEG505-1	
	c)	State the desirable limits as per IS for following parameters of drinking water - (i) Turbidity (ii) Total Solids (iii) Chlorides (iv) pH value	R	CEG505-1	
	d)	List various methods of disinfection of water to make it potable.	R	CEG505-2	
	e)	List different types of joints which are provided on the pipes of distribution system of water	R	CEG505-3	
	f)	What is reflex valve?	U	CEG505-3	
Q.2		Attempt any **FOUR:**			**16**
	a)	Describe in brief Reservoir intake, with neat labeled sketch.	U	CEG505-1	
	b)	Explain about following types of variation of demand of water- (i) Seasonal variation (ii) Monthly variation (iii) Daily variation (iv) Hourly variation	U	CEG505-1	
	c)	State the objectives of aeration of water and describe any one method of aeration.	U	CEG505-2	
	d)	Explain the process of back washing of rapid sand filter with labeled sketch.	U	CEG505-2	
	e)	Draw a flow diagram of water supply scheme from the source of water to the consumer.	U	CEG505-1	
	f)	Explain the Jar Test to determine approximate dose of coagulant with the help of neat labeled sketch.	U	CEG505-2	
Q.3		Attempt any **FOUR:**			**16**
	a)	Enlist different methods of layout of distribution of water. Explain any one method with labeled sketch.	U	CEG505-3	
	b)	List the methods of forecasting of population and state the necessity of population forecasting	U	CEG505-1	
	c)	State the precautions to be taken during the collection of water sample for analysis purpose.	U	CEG505-1	
	d)	Explain the horizontal pressure filter with neat labeled sketch	A	CEG505-2	
	e)	State the necessity of chemical coagulation and describe the principle behind sedimentation with coagulation	U	CEG505-2	
	f)	Enlist different methods of distribution of water depending on location of the source of water. Explain any one in detail.	U	CEG505-3	

GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

(An Autonomous Institute of Govt. Of Maharashtra)

SUMMER/WINTER - 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - V PROGRAM : CIVIL ENGINEERING

COURSE CODE: - CEG 505 / CEF506

COURSE NAME: - ENVIRONMENTAL ENGINEERING

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 05/06/2023

QN	SQN	SECTION –II	R/U/A	Co	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Define i) Sanitary Sewage ii) Garbage	R	CEG 505-4	
	b)	Define Activated Sludge.	R	CEG 505-6	
	c)	What are the common constituents of solid waste?	R	CEG 505-4	
	d)	What is House Drainage?	U	CEG 505-4	
	e)	Mention the physical properties of sewage.	U	CEG 505-6	
	f)	What do you mean by Non-scouring velocity?	U	CEG 505-5	
Q.5		Attempt any **FOUR:**			**16**
	a)	Explain in brief various types of 'Hazardous waste'.	U	CEG 505-4	
	b)	Enlist and explain in brief the various 'system of sewerage'.	U	CEG 505-5	
	c)	Define BOD. Write its significance.	R	CEG 505-6	
	d)	Distinguish between i) Nahni trap and Gully trap ii)) One pipe system and Two pipe system	A	CEG 505-4	
	e)	What are the factors affecting quantity of sewage?	R	CEG 505-5	
	f)	State the advantages and disadvantages of 'trickling filter'.	U	CEG 505-6	
Q.6		Attempt any **FOUR:**			**16**
	a)	Write the use of Waste pipe, Soil pipe, rain water pipe, Antisiphonage pipe.	A	CEG 505-4	
	b)	What is Dry weather flow? What factors should be considered while determining the quantity of D.W.F?	U	CEG 505-5	
	c)	Enlist and explain the methods of collection of Dry Refuse.	A	CEG 505-4	
	d)	State any four objects of sewage treatment.	R	CEG 505-6	
	e)	What is the principle of working of septic tank?	U	CEG 505-5	
	f)	What are the fundamental principles of sanitation?	U	CEG 505-4	

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GOVERNMENT POLYTECHNIC, KOLHAPUR 416004.

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EVEN TERM END EXAM SUMMER -2023

EXAM SEAT NO. | | | | | | |

LEVEL: **FOURTH** PROGRAM: **CIVIL ENGINEERING**

COURSE CODE: **CEG405/CEF406** COURSE NAME: **Concrete technology**

MAX. MARKS: **80** TIME: **3 HRS.** DATE: **05/06/2023**

Instruction :-

1) Answer two sections must be written in separate section answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**-Question No, **SQN**-Sub-Question No, **R**- Remembering, **U**-Understanding, **A**-Application **CO**-Course outcome

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QN	SQN	SECTION I	RUA	CO CEF 405	Marks
Q.1		Attempt any **FOUR**			**(16)**
	a)	State ingredients of concrete with role of each ingredient.			
	b)	List Bogue's compounds.	U	02	
	c)	List out methods of compaction of concrete.	U	01	
	d)	Define i) Fineness of cement ii) consistency of cement.	R	02	
	e)	Differentiate between segregation and bleeding.	U	03	
	f)	Define workability of concrete and state factors affecting on the workability of concrete.	R	03	
Q.2		Attempt any **FOUR**			**(16)**
	a)	State importance of supervision for concreting operations.	U	01	
	b)	State the precautions to be taken in transportation on concrete.	U	01	
	c)	Enlist the types of vibrators and explain any one of the vibrator.	U	01	
	d)	Explain the procedure to determine standard consistency of cement.	U	02	
	e)	Name any four types of cement and state their uses.	R	02	
	f)	Draw neat labeled diagram of compaction factor apparatus.	U	03	
Q.3		Attempt any FOUR			**(16)**
	a)	State the importance of curing.	U	01	
	b)	Define concrete and grades of concrete state where high performance concrete is to be used.	R	01	
	c)	Determine fineness modulus of fine aggregate with following observations. Sieve size in mm: 4.75 | 2.36 | 1.18 | 0.6 | 0.3 | 0.15 Mass of retained aggregate in gm: 50 | 310 | 205 | 240 | 150 | 30 Mass of total sample = 1000gm.	A	02	
	d)	Draw typical sketches of aggregate particles having following shapes. i) founded ii) subrounded iii) angular iv) subangular.	U	02	
	e)	Explain how silt content on sand can be determined, with neat diagram.	R	02	
	f)	State the precautions taken for freedom from bleeding.	U	03	

P.T.O.

QN	SQN	SECTION - II	RUA	CO CEF 405	Marks
Q.4		Attempt any **FOUR**			**(08)**
	a)	Define mix design.	R	04	
	b)	Define formwork and state its use in concreting.	R	04	
	c)	Draw the graph showing relationship between water cement ratio and strength of concrete.	R	05	
	d)	Enlist any two non destructive tests on concrete.	R	05	
	e)	Define ready mix concrete and polymer concrete.	R	06	
	f)	State two applications of light weight concrete.	R	06	
Q.5		Attempt any **FOUR**			**(16)**
	a)	Explain IS code method of concrete mix design.	U	04	
	b)	Draw sketch of formwork for rectangular beam (plan only) & state stripping time for beam & column.	U	04	
	c)	Explain the various properties of hardened concrete.	R	05	
	d)	State objective and principle of ultrasonic pulse velocity test on concrete, with the help of sketch.	R	05	
	e)	Enlist the application of shotcreting.	R	06	
	f)	Enlist the precautions taken in cold weather concreting.	R	06	
Q.6		Attempt any **FOUR**			**(16)**
	a)	Differentiate between nominal mix and design mix with typical proportion example and comment on the quality of concrete.	U	04	
	b)	State any four factors affecting impermeability of concrete.	R	05	
	c)	How to ascertain the quality of concrete and state the various test standards that are employed to ensure quality.	U	05	
	d)	State how compressive strength is determined by using Rebound Hammer.	U	05	
	e)	State application of following (two each) i) Guniting ii) Polymer concrete	R	06	
	f)	Define ferrocement and explain its applications.	U	06	

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WINTER/SUMMER- 2023

EXAM. SEAT NO. | | | | | | |

LEVEL : - FIFTH PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG506

COURSE NAME :- IRRIGATION ENGINEERING

MAX. MARKS : **80** TIME : **03 Hrs** DATE :-03/06/**23**

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	**SECTION -I**	R/U/A	**CO**	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	Define- Irrigation Engineering.	R	CEG506-1	
	b)	What is river gausing?	R	CEG506-1	
	c)	Define- CCA	R	CEG506-2	
	d)	What is the difference between Gross Command Area and Culturable Command Area?	U	CEG506-2	
	e)	What are the different types of Bhandharas?	R	CEG506-3	
	f)	What is the difference between Lift and Flow Irrigation?	U	CEG506-3	
Q.2		Attempt any **FOUR**:			**16**
	a)	Classify the irrigation project on the basis of purpose and administration.	U	CEG506-1	
	b)	State the effect of type of catchment on maximum flood discharge.	U	CEG506-1	
	c)	Draw the layout of drip irrigation and write the maintenance of drip irrigation.	A	CEG506-2	
	d)	State the two advantages and two limitations of sprinkler irrigation.	R	CEG506-2	
	e)	Draw layout of lift irrigation and give their component.	U	CEG506-3	
	f)	State two advantages and two disadvantages of bandhara irrigation.	R	CEG506-3	
Q.3		Attempt any **FOUR:**			**16**
	a)	Define -Yield, Maximum Flood Discharge and Runoff and Write the difference between these terms.	U	CEG506-1	
	b)	Describe in brief the terms- cropping pattern and crop rotation.	U	CEG506-2	
	c)	State any four criteria for selection of site for percolation tank.	R	CEG506-3	
	d)	Draw a lay-out of Bandhara irrigation scheme showing the catchment area, irrigation canal and other component parts.	A	CEG506-3	
	e)	Describe method of determination of yield of well.	A	CEG506-3	
	f)	Describe with sketches the construction of K. T. weir.	U	CEG506-3	

P.T.O.

GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

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WINTER/SUMMER- 202

EXAM SEAT NO. | | | | | | |

LEVEL : - FIFTH PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG506

COURSE NAME : IRRIGATION ENGINEERING

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 03/06/ 23

QN	SQN	SECTION –II	R/U/A	Co CEG506	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Draw a neat c/s of gravity dam showing different control levels.	U	4	
	b)	Define - i) Free board ii) Flood absorption Capacity	R	4	
	c)	State four factors to be considered while selecting site for a gravity dam.	U	5	
	d)	Write the purpose & location of drainage gallery for gravity dam.	U	5	
	e)	Define: i) Capacity of canal ii) Time factor	R	6	
	f)	State any four preventive measures of water logging.	U	6	
Q.5		Attempt any **FOUR:**			**16**
	a)	Fix the reservoir level FRL & TBL from following data I) Dead storage level - 120m II) Crop water requirements - 9000 m^3 III) Tank losses - 1200 m^3 IV) Free Board - 1.5m V) Flood lift - 1.70m	A	4	
	b)	Discuss about the forces acting on gravity dam with a neat sketch	A	5	
	c)	Give the reason as to why theoretical section of gravity dam needs to be modified to suit for practical conditions.	A	5	
	d)	Illustrate with a neat sketch bucket type dissipater stating the circumstances under which it is used.	U	5	
	e)	Draw a neat sketch of aqueduct & super-passage & name all component parts.	R	6	
	f)	State the purpose of canal outlets & state any four functions of it.	U	6	
Q.6		Attempt any **FOUR:**			**16**
	a)	Discuss the term sedimentation with any four factors affecting rate of silting.	U	4	
	b)	Draw a typical c/s of earthen dam & show all component parts.	A	5	
	c)	State the functions of i) Cut off trench ii) Rock Toe Iii) Drains iv) Turfing	R	5	
	d)	Explain the precautions & remedial measures you would undertake to control the seepage through earthen dam foundations.	A	5	
	e)	State under which circumstances each of following is constructed - i) Syphon aqueduct ii) Level crossing	A	6	
	f)	State the purpose of canal lining (any four points) & Enlist materials used for canal lining.	U/R	6	

Control RL	100	102	104	106	108	110
Capacity	2000	4000	5000	8000	9000	11000

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GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

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SUMMER/WINTER-

EXAM SEAT NO. | | | | | | |

LEVEL : - Fourth PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG409 / CEF410

COURSE NAME :- TOWN AND COUNTRY PLANNING

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 02/06/2023

QN	SQN	SECTION –II	R/U/A	Co	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Enlist any four legislation for development of urban land.	R	CEG-409-4	
	b)	State any two functions of village panchayat	R	CEG-409-4	
	c)	Define Bye-laws, State its necessity.	R	CEG-409-5	
	d)	List any two advantages of set back.	U	CEG-409-5	
	e)	Name any four Agro industries in your area	A	CEG-409-6	
	f)	State the necessity of village planning.	U	CEG-409-6	
Q.5		Attempt any **FOUR:**			**16**
	a)	Describe any four important features of MR &TP act.	U	CEG-409-4	
	b)	Discuss the salient features of Land acquisition act.	R	CEG-409-4	
	c)	Define FSI and Floating FSI with example.	A	CEG-409-5	
	d)	State the provisions to be made in building bye-laws with respect to fire protection.	U	CEG-409-5	
	e)	Describe rural housing problems in India.	A	CEG-409-6	
	f)	State general Principles of rural housing design.	U	CEG-409-6	
Q.6		Attempt any **FOUR:**			**16**
	a)	List any eight functions of local authority.	U	CEG-409-4	
	b)	Describe aim and object of Land acquisition Act.	R	CEG-409-4	
	c)	Differentiate between set back and light plane with neat sketch.	A	CEG-409-5	
	d)	State and Describe the usual provisions made for off-street parking in byelaws.	U	CEG-409-5	
	e)	State the concept of low cost housing, which materials you will be using in it.	U	CEG-409-6	
	f)	State and describe types of villages.	U	CEG-409-6	

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GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

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SUMMER/~~WINTER~~- ------ 2023

EXAM SEAT NO. | | | | | | |

LEVEL : - FOURTH PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG 409 / CEF410

COURSE NAME :- TOWN AND COUNTRY PLANNING

MAX. MARKS : **80** TIME : **03 Hrs** DATE :-02/06/2023

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	**SECTION -I**	R/U/A	Co	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	Write the importance of a neighbourhood planning.	U	CEG409-3	
	b)	Enlist any four types of surveys.	R	CEG409-1	
	c)	State the reasons for preparing a Master Plan for the town.	U	CEG409-2	
	d)	Write any two the objects of the landscape architecture.	U	CEG409-1	
	e)	State any four classification for agencies of housing schemes.	U	CEG409-3	
	f)	Enlist each any two types of parks and playgrounds.	R	CEG409-2	
Q.2		Attempt any **FOUR:**			**16**
	a)	Discuss the necessary of regional planning.	U	CEG409-1	
	b)	Explain the classification of the industries.	R	CEG409-2	
	c)	Explain the housing problems in India.	A	CEG409-2	
	d)	State the principles of town planning	U	CEG409-1	
	e)	Explain any four essential features of neighbourhood planning.	U	CEG409-3	
	f)	State any four objects of town planning.	U	CEG409-1	
Q.3		Attempt any **FOUR:**			**16**
	a)	Explain the necessity of regional planning.	A	CEG409-1	
	b)	State and explain the points to be carefully attended to in any slum clearance projects.	A	CEG409-2	
	c)	Explain the principles of neighbourhood planning.	U	CEG409-3	
	d)	Enlist the factors to be considered for a preparation of land use plan or analysis.	U	CEG409-1	
	e)	Explain the importance of site selection with respect to the purpose of the public buildings.	R	CEG409-2	
	f)	Enlist any four the advantages of zoning.	U	CEG409-1	

P.T.O.

GOVERNMENT POLYTECHNIC, KOLHAPUR 416004.

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EVEN TERM END EXAM SUMMER -2023

EXAM SEAT NO. | | | | | | |

LEVEL: **THIRD** PROGRAM: **CIVIL ENGINEERING**

COURSE CODE: **CEG311**

COURSE NAME: **Advanced construction techniques & equipments.**

MAX. MARKS: **80** TIME: **3 HRS.** DATE: **02/06/2023**

Instruction:-

1) Answer must be written in main answer book provided. (and supplements if required)
2) Illustrate your answers with sketches where ever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables will be made available on request.
5) Assume and mention suitable additional data necessary.
6) Use of Mobile is strictly prohibited.
7) **QN**-Question No, **SQN**-Sub-Question No, **R**- Remembering, **U**-Understanding, **A**-Application **CO**-Course outcome

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QN	SQN	QUESTION TEXT	RUA	CO CEG 311	Marks
Q.1	A	Attempt any **FOUR**			**(08)**
	a)	Define HPC (High performance concrete).	R	01	
	b)	State any four types of grouts used for grouting.	U	01	
	c)	Define FRC.	R	01	
	d)	State any four applications of "Soil Freezing".	U	02	
	e)	Define stone column and state its any two advantages.	R	02	
	f)	Enlist any two limitations of bridge formwork.	R	02	
Q.2	A	Attempt any **FOUR**			**(16)**
	a)	Explain in brief the concept of grouting pressure.	U	01	
	b)	Draw a neat sketch of RMC and state its any four advantages.	R	01	
	c)	Explain the process of Micro piling with neat sketch.	U	02	
	d)	Explain any four uses of grouts in building.	U	01	
	e)	Explain the concept of "Soil Heating".	U	02	
	f)	i) Enlist any four types of slip formwork. ii) Explain any one type with neat sketch.	R	03	
Q.3		Attempt any **FOUR**			**(16)**
	a)	i) Enlist any four equipments used in Tremix Concreting. ii) State any four applications of Tremix Concreting.	U	01	
	b)	State any four properties of Self Healing Concrete (SHC)	R	01	
	c)	Explain any four necessities of grouting.	U	01	
	d)	Explain in brief the concept of "Soil Heating".	U	02	
	e)	State any four types of formworks used in advance construction techniques.	R	03	
	f)	State and explain any four necessities of formwork.	U	03	

P.T.O.

QN	SQN	QUESTION TEXT`	RUA	CO CEG 311	Marks
Q.4		Attempt any **FOUR**			**(08)**
	a)	State the principle on which crane works.	U	04	
	b)	List the different types of rollers used in civil engineering works.	R	04	
	c)	State any two uses of needle vibrator.	U	05	
	d)	Enlist any four types of concrete plant.	R	05	
	e)	List the different types of crushers used to obtain aggregate.	R	05	
	f)	Define : standard equipment.	R	06	
Q.5		Attempt any **FOUR**			**(16)**
	a)	Draw a neat labeled sketch of Tower Crane and explain its working in brief.	U	04	
	b)	Draw a neat sketch of dragline and explain its cycle of operation.	A	04	
	c)	Explain the working of automatic concrete plants.	U	05	
	d)	Discuss about the components and working of hot mix bitumen plant..	A	05	
	e)	State any four factors that affect owning and operating cost of construction equipment.	U	06	
	f)	Explain in brief about preventive maintenance of equipment. State any two advantages of preventive maintenance.	U	06	
Q.6		Attempt any **FOUR**			**(16)**
	a)	Draw a neat sketch of belt conveyor system. State the function of each component.	U	04	
	b)	Explain the working of Gantry Crane with a neat sketch.	A	04	
	c)	Enlist any four types of conveying equipments and state the advantages of any one equipment.	U	04	
	d)	Explain the working of primary stone crusher.	A	05	
	e)	Explain in detail about any two equipments used for transporation of concrete.	U	04	
	f)	Explain in detail about Dumper w.r.t. its uses and capacity of each type of dumper.	A	04	

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WINTER/SUMMER-2023

EXAM SEAT NO. | | | | | | |

LEVEL: - FIFTH PROGRAM: CIVIL ENGINEERING

COURSE CODE: - CEG503

COURSE NAME:- CONSTRUCTION MANAGEMENT

MAX. MARKS: **80** TIME: **03 HOURS** DATE: -01/06/2023

Instruction :-

1) Answers of two sections must be written in separate section answer book provided.
2) Illustrate your answers with sketches wherever necessary.
3) Use of non-programmable pocket calculator is permissible.
4) Mathematical and other tables shall be made available on request.
5) Assume and mention suitable additional data if necessary.
6) Use of Mobile is strictly prohibited.
7) QN- Question No., SQN-Sub Question No. R- Remembering, U- Understanding, A- Application.

QN	SQN	SECTION -I	R/U/A	Co CEG 503	Marks
Q.1		Attempt any **FOUR:**			**08**
	a)	Define Management	R	2	
	b)	Write two limitations of bar chart	U	3	
	c)	State significance of critical path	U	3	
	d)	Enlist any four agencies associated with construction work	R	1	
	e)	Write any four desirable qualities of leader	U	2	
	f)	State the necessity of organization.	R	2	
Q.2		Attempt any **FOUR:**			**16**
	a)	List the fourteen principles of management.	A	2	
	b)	"Planning work is the most important function of the supervisor." Explain	R	2	
	c)	Describe in brief controlling as function of management.	U	2	
	d)	State various types of Organizations explain any one with advantages and disadvantages	R	2	
	e)	Explain the importance of Motivation.	U	2	
	f)	State the different stages required for "Pre tender planning"	A	1	
Q.3		Attempt any **FOUR:**			**16**
	a)	Describe any four advantages and disadvantages of written communication.	U	2	
	b)	Explain how workers participation in management is important?	R	2	
	c)	Write special characteristics of civil engineering works.	U	1	
	d)	For the activity table given below prepare CPM Network	A	3	
	e)	For the network prepared in 3(d) above, calculate EST, LST, EFT, LFT, float and critical path. Also calculate the project duration.	A	3	
	f)	Define human resource management, andstate any four functions of HR department.	R	2	

Activity	1-2	1-3	1-4	2-7	3-4	4-5	4-7	5-6	5-7	5-8	6-8	7-8
Duration(Days)	8	10	5	6	3	7	0	4	3	6	5	5

P.T.O.

GOVERNMENT POLYTECHNIC, KOLHAPUR – 416004.

(An Autonomous Institute of Govt. Of Maharashtra)

SUMMER- 2023

EXAM. SEAT NO. | | | | | | |

LEVEL : - FIFTH PROGRAM : CIVIL ENGINEERING

COURSE CODE :- CEG503

COURSE NAME :- CONSTRUCTION MANAGEMENT

MAX. MARKS : **80** TIME : **03 Hrs** DATE :- 01/06/23

QN	SQN	SECTION –II	R/U/A	CO	Marks
Q.4		Attempt any **FOUR:**			**08**
	a)	Enlist Acts/Laws related to construction activities.	R	CEG503-4	
	b)	Enlist methods of training for workers.	R	CEG503-4	
	c)	Define- Inventory management.	R	CEG503-5	
	d)	Enlist any two factors affecting the job Layout.	U	CEG503-5	
	e)	What is Productivity?	U	CEG503-6	
	f)	Define the term 'Injury frequency rate'.	R	CEG503-6	
Q.5		Attempt any **FOUR:**			**16**
	a)	Describe the importance of personal management in construction	U	CEG503-4	
	b)	What are the provisions made in Factory act?	U	CEG503-4	
	c)	Explain concept of ABC analysis in inventory control.	U	CEG503-5	
	d)	What are the objectives of Work Study? What are its uses?	R	CEG503-6	
	e)	Explain steps involved in work measurement.	U	CEG503-6	
	f)	Describe the techniques of recording in case of method study.	R	CEG503-6	
Q.6		Attempt any **FOUR:**			**16**
	a)	State any eight basic principles of personnel policy.	R	CEG503-4	
	b)	Describe the various sources of Employment.	U	CEG503-4	
	c)	Enlist any eight functions of material manager.	R	CEG503-5	
	d)	Describe in brief 'Economic Order Quantity'	U	CEG503-5	
	e)	State the safety precautions, which are necessary to avoid accidents on construction sites.	R	CEG503-6	
	f)	Enlist various allowances used in work measurement.	R	CEG503-6	

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