

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Winter Examination – Nov. 2019

Course: B. Tech in -Civil Engineering

Sem: IV

Subject Name: Hydraulic Engg. II

Subject Code: BTCVC401

Max Marks: 60

Date:- 26/11/19

Duration:- 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

Marks

Q.1 Attempt any two of following Questions

- (A) Explain classification of flow in open channel and Types of channels. **6**
- (B) Water flows over a rectangular weir 1.5m wide at a depth of 160mm and afterwards passes through a triangular right-angled weir. Taking Cd for the rectangular and triangular weir as 0.62 and 0.59 respectively. Find the depth over the triangular weir. **6**
- (C) Define most economical section of channel. Derive condition for most economical rectangular channel. **6**

Q.2 Attempt following Questions

- (A) Calculate the quantity of water that will be discharged at a uniform depth of 0.9m in a 1.2m diameter pipe which is laid at a slope 1 in 1000. Take $C=55$ **4**
- (B) Explain Specific energy and Specific energy curve. **4**
- (C) The specific energy for a 4 m wide rectangular channel is to be 3 Nm/m. If the rate of flow of water through the channel is $18 \text{ m}^3/\text{s}$. Determine the alternate depths of flow. **4**

Q.3 Attempt following Questions

- (A) Derive the expression of depth of hydraulic jump. **6**
- (B) Give classification of channels according to flow (only table) and derive expression for the length of back water curve / Direct step method. **6**

Q.4 Attempt following Questions

- (A) Explain velocity triangles at outlet and inlet of unsymmetrical moving curved **8**

plate when jet strikes tangentially at one of the tips. Derive the expression for

- 1) The force exerted by jet of water on same plate
- 2) Work done per second per unit weight of fluid striking per second
- 3) Work done per second per unit mass of fluid striking per second.
- 4) Efficiency of jet

(B) A nozzle of 50mm dia. delivers a stream of water at 20 m/s perpendicular to a plate that moves away from the jet at 5 m/s. Find

4

- 1) The force on the plate
- 2) The efficiency of the jet.

Q.5 Attempt following Questions

(A) Elaborate major component parts of pelton wheel, Francis and Kaplan Turbine with neat sketch.

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(B) A pelton wheel has a mean bucket speed of 10 m/s with a jet of water flowing at the rate of 700 lit/sec under a head of 30m. The bucket deflects the jet through an angle of 160° . Calculate the power given by water to the runner and the hydraulic efficiency of the turbine. Assume coefficient of velocity as 0.98.

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(C) Explain

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- 1) Efficiencies of a Centrifugal pump
- 2) Airlift pump and submersible pump.

Q.6 Attempt following Questions

(A) Explain – Laminar boundary layer, Turbulent boundary layer, Laminar sub layer, Boundary layer thickness, Displacement thickness, Momentum thickness, Energy thickness and coefficient of Drag.

8

(B) Determine the thickness of a boundary layer at the trailing edge of smooth plate of length 4m and of width 1.5m, when the plate is moving with a velocity of 4 m/s in stationary air. Take kinematic viscosity of air as $1.5 \times 10^{-5} \text{ m}^2/\text{s}$.

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*** End of paper ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE- 402 103

Winter End Sem. Examination-Supplementary Nov.- 2019

Course: B. Tech in Civil Engineering

Sem: IV

Subject Name: Surveying-II (BTCVC402)

Max Marks: 60

Date: 28/11/2019

Duration: 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Marks

Q.1 Solve the following.

- A) i) Explain instruments used in Tacheometry.
ii) Explain characteristics of Tacheometry.
iii) Explain importance of EDM

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- B) Following observations made using a tacheometry fitted with an anallatic lens, the multiplying constant being 100.

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Inst. station	Height of Inst.	Staff station	WCB	Vertical angle	Hair readings	Remarks
O	1.550	A	$30^{\circ}30'$	$4^{\circ}30'$	1.155, 1.755, 2.355	RL of O =
		B	$75^{\circ}30'$	$10^{\circ}15'$	1.250, 2.000, 2.750	150.000

Calculate the distance AB, the RLs of A and B. Find also the gradient of the line AB.

Q.2 Solve the following.

- A) Explain measurement of horizontal distance by Subtense Bar and Procedure of observation with neat figure.
- B) Explain Triangulation systems/figures with neat diagrams.

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Q.3 Solve the following.

- A) Define:

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- i) The Zenith iii) The Latitude v) The Altitude
- ii) The Nadir iv) The Longitude vi) The Declination

- B) Explain Spherical triangle with their properties with formulae in Spherical Trigonometry.

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Q.4 Solve the following.

- A) Define Transition curve. Explain requirements of Ideal transition curve. Explain objectives of providing transition curves. **06**
- B) Explain in detail: i) Degree of Curve ii) Relation between radius and degree of curve iii) Superelevations. **06**

Q.5 Solve the following.

- A) i) A vertical photograph was taken at an altitude of 1200 m above mean sea level. Determine the scale of the photograph for terrain lying at elevations of 80 m and 300 m if the focal length of the camera is 15 cm. **06**
- ii) A camera having focal length of 20 cm is used to take a vertical photograph to a terrain having an average elevation of 1500 m. What is the height above sea level at which an air-craft must fly in order to get the scale of 1:8000?
- B) a) Explain: **06**
- i) Mosaic and its type.
- ii) Stereoscopy and Photo interpretation.
- b) The scale of an aerial photograph 20cm x 20cm is 1cm=100m. Determine the number of photographs required to cover an area of 8km x 12.5km, if the longitudinal overlap is 60% and side overlap is 30%.

Q.6 Solve any one of the following.

- A) Write uses and applications of i) G.P.S. and ii) G.I.S. in Civil Engineering. **06**
- B) Explain the Idealized Remote sensing system and their stages with neat sketch **06**

***** Paper End *****

Instructions to the Students:

1. Solve **ANY FIVE** questions out of the following.
2. Use of non-programmable scientific calculators is allowed.
3. Assume suitable data wherever necessary and mention it clearly.
4. Solve **All Questions in Sequential order.**

Q. 1 Solve the following.

- A) Find Static and Kinematic Indeterminacy of the structure as shown in Fig No 1

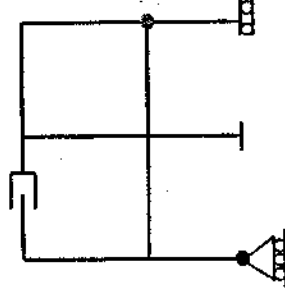


Fig No 1

- B) Find Static and Kinematic Indeterminacy of the structure as shown in Fig No 2

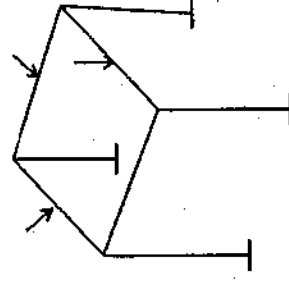


Fig No 2

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Q.2 Solve the following.

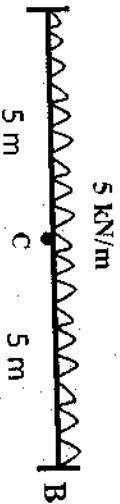
- A) A Beam AB is Simply Supported over a span 5m in length. A Concentrated load of 30kN is acting at section 1.25m from support A. Calculate the deflection under the point load. Also calculate the deflection at the center of the beam and Slope at end A for the beam. Take $E = 200,000 \text{ MPa}$ and $I = 13 \times 10^4 \text{ m}^4$.

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Q.3 Solve the following.

- A) Draw the Bending Moment diagram, Elastic curve, location of Point of contraflexure and maximum deflection for a Fixed beam subjected to UDL 5 kN/m over a span of Length 10 m . EI is Constant

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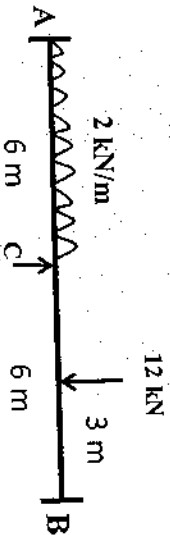
Q.4 Solve the following.

- A Continuous Beam ABC is Supporteded at A, B, C. Span AB = 6m, Span BC = 5m. Span AB carries a UDL of 30 kN/m and Span BC Carries a UDL of 25 kN/m . Calculate the Support moments and draw SFD, BMD by Hardy Cross Method.
- B) Draw BMD and SFD for the Beam as Shown in Figure. Also Find the reactions at Support. Use theorem of Three moments.

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Q.5 Solve the following.

- A) Determine the Support moments for the continuous beam as shown in fig below. The Relative values of MI are as shown in fig below. Use Slope Deflection method. Take E as constant.

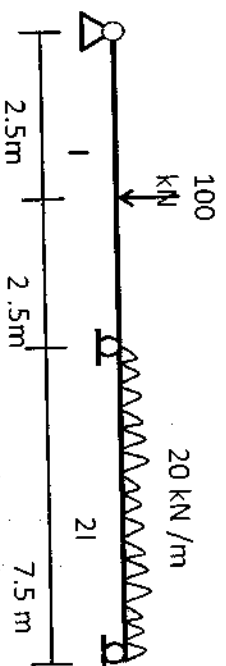
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Q.6 Solve the following.

- A) A Gas Cylinder of internal diameter 40 mm is 5 mm thick. If the tensile stress in the material is not to exceed 30 MPa , Find the maximum pressure which can be allowed in the cylinder.
- B) A cylindrical vessel 2 m long and 500 mm in diameter with 10 mm thick plates is subjected to an internal pressure of 0.3 MPa . Calculate the change in the volume of the vessel. Take $E = 500 \text{ GPa}$ and poisson's ratio $= 0.3$ for the vessel material

*** End of the paper ***

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**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD -402 103**

Semester Winter Examination – December - 2019

Branch : Civil Engineering
Subject :- Planning for Sustainable Development(BTCVE404B)
Date: 02/12/2019

Sem:- IV
Marks: 60
Time:- 3 Hr.

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

- Q.1. Solve any two of the following: (6x2=12)
- a. What is sustainable development and why is it important?
 - b. How do you promote sustainable development goals?
 - c. Describes one case study on technology and sustainable development.
- Q.2. Solve any two of the following: (6x2=12)
- a. State the different pillar of Sustainable development. Explain the economic pillar of sustainability.
 - b. Explain in detail societal transformation and sustainable approach.
 - c. Why we need the strategic approach to sustainable development.
- Q.3. Solve any two of the following: (6x2=12)
- a. What is environmental degradation? Explain in brief.
 - b. Why good governance is so important in increasing sustainability in cities.
 - c. Explain in details various methods adopted for promoting sustainable development.
- Q.4. Solve any two of the following: (6x2=12)
- a. Explain any two alternative approaches towards sustainable development.
 - b. Explain the role of innovation and technology in sustainable development.
 - c. Discuss the relation between the sustainable development and environment.
- Q.5. Solve any two of the following: (6x2=12)
- a. Explain in brief capacity building for sustainable development.
 - b. Discuss about Policy responses to environmental degradation.
 - c. Discuss one of the current issue and area of debate in relation to sustainable development.
- Q.6. Solve any two of the following: (6x2=12)
- a. How does sustainable development make economic sense for society?
 - b. Explain about evolution of sustainable development concept.
 - c. How can sustainable development strategies be monitored?

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE End Semester Examination – Winter 2019 Course: B. Tech in Sem: III Subject Name: Engineering Mathematics-III (BTBSC301) Marks: 60 Date: 10/12/2019 Duration: 3 Hr.				
Instructions to the Students: 1. Solve ANY FIVE questions out of the following. 2. The level question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question. 3. Use of non-programmable scientific calculators is allowed. 4. Assume suitable data wherever necessary and mention it clearly.				
Q.1	Attempt the following.	(Level/CO)	Marks	
A)	Find $L\left\{\cosh t \int_0^t e^u \cosh u \, du\right\}$.	Analysis	4	12
B)	If $f(t) = \begin{cases} t, & 0 < t < \pi \\ \pi - t, & \pi < t < 2\pi \end{cases}$ is a periodic function with period 2π . Find $L\{f(t)\}$.	Analysis	4	4
C)	Using Laplace transform evaluate $\int_0^\infty e^{-at} \frac{\sin^2 t}{t} \, dt$	Evaluation	4	4
Q.2	Attempt any three of the following.			12
A)	Using convolution theorem find $L^{-1}\left\{\frac{1}{s(s+1)(s+2)}\right\}$	Application	4	4
B)	Find $L^{-1}\{f(s)\}$, where $\bar{f}(s) = \log\left(\frac{s^2+1}{s(s+1)}\right)$	Analysis	4	4
C)	Using Laplace transform solve $y'' + 2y' + 5y = e^{-t} \sin t$; $y(0) = 0$, $y'(0) = 1$	Application	4	4
D)	Find $L^{-1}\left\{\frac{s^2+2s-4}{(s-5)(s^2+9)}\right\}$	Analysis	4	4
Q.3	Attempt any three of the following.			12

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A)	Express the function $f(x) = \begin{cases} \sin x, & 0 \leq x \leq \pi \\ 0, & x > \pi \end{cases}$ as a Fourier sine integral and hence evaluate that $\int_0^{\infty} \frac{\sin x \sin \pi x}{1-x^2} dx$.	Evaluation	4
B)	Using Parseval's identity for cosine transform, evaluate $\int_0^{\infty} \frac{dx}{(x^2+a^2)(x^2+b^2)}$.	Application	4
C)	Find the Fourier sine transform of $f(x) = \begin{cases} x, & 0 \leq x \leq 1 \\ 2-x, & 1 \leq x \leq 2 \\ 0, & x > 2 \end{cases}$.	Analysis	4
D)	If $F_s(f(x)) = \frac{e^{-\pi x}}{s}$, then find $f(x)$. Hence obtain the inverse Fourier sine transform of $\frac{1}{s}$.	Analysis	4
Q. 4	Attempt any three of the following:		12
A)	Form the partial differential equation by eliminating arbitrary function f from $f(x^2 + y^2 + z^2, 3x + 5y + 7z) = 0$	Synthesis	4
B)	Solve $p^2 z - q^2 = z^2 + (x + y)^2$	Application	4
C)	Determine the solution of one dimensional heat equation $\frac{\partial u}{\partial t} = c \frac{\partial^2 u}{\partial x^2}$ where the boundary conditions are $u(0, t) = 0$, $u(l, t) = 0$ ($t > 0$) and the initial condition $u(x, 0) = x$; l being the length of the bar.	Analysis	4
D)	Use the method of separation of variables to solve the equation $\frac{\partial u}{\partial x} = 2 \frac{\partial u}{\partial y} + u$, given that $u(x, 0) = 6e^{-3x}$	Application	4
Q. 5	Attempt the following.		12
A)	Determine the analytic function $f(z)$ in terms of z whose real part is $\frac{\sin 2x}{\cosh 2y - \cos 2x}$	Analysis	4
B)	Prove that $u = x^2 - y^2 - 2xy - 2x + 3y$ is harmonic. Find a function v such that $f(z) = u + iv$ is analytic.	Analysis	4
C)	Find the bilinear transformation which maps the points $z = 0, -1, -i$ onto the points $w = i, 0, \infty$. Also, find the image of the unit circle $ z = 1$.	Analysis	4
Q. 6	Attempt the following.		12

A)	Use Cauchy's integral formula to evaluate $\oint_C \frac{\sin \pi z^2 + \cos \pi z^2}{(z-1)(z-2)} dz$, where C is the circle $ z = 3$.	Evaluation	4
B)	Find the poles of function $\frac{z^2 - 3z}{(z+1)(z^2+4)}$. Also find the residue at each pole.	Analysis	4
C)	Evaluate $\oint_C \frac{e^z}{\cos \pi z} dz$, where C is the unit circle $ z = 1$.	Evaluation	4
*** Paper End ***			

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**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL
UNIVERSITY, LONERE**

Winter Semester Examination: Dec.-2019

**B. Tech. Second Year
Mechanics of Solids (BTCVC 302)
Date: 12/12/2019**

**Sem.: III)
Marks: 60
Time: 3 Hrs**

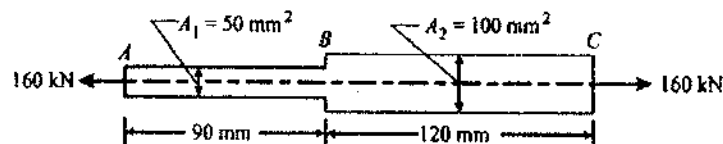
INSTRUCTIONS TO THE STUDENTS

1. Attempt any five questions from the given six questions. Figures to the right indicate full marks.
2. Illustrate your answers with neat sketches, diagrams etc. wherever necessary.
3. Necessary data is given in the respective questions. If such data is not given, it means that the knowledge of that data is a part of the examination.
4. If some part or parameter is noticed to be missing, you may appropriately assume and mention it.
5. Use of logarithmic table, drawing instruments and non programmable calculators is permitted.

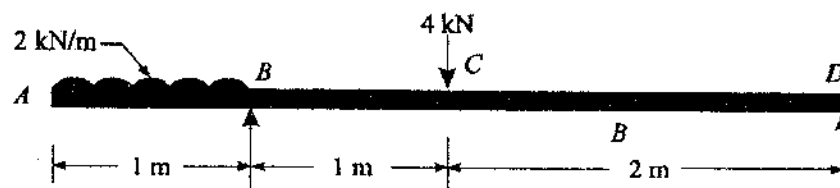
(Marks)

Q. 1 Answer any two from the following:

- a) Define: Hooke's law, Elasticity, and Ductility. (6)
- b) A steel rod 25 mm diameter is at a temperature of 100°C . At this temperature the length of rod is 6 m and is fixed at both of its ends. Determine the stress in the rod, when the temperature falls down to 60°C , if
(a) the ends do not yield, and (b) the ends yield by 1 mm
Take $E = 200 \text{ GPa}$ and $\alpha = 12 \times 10^{-6}$ per degree Celsius (6)
- c) A steel rod ABC is 210 mm long is subjected to 160 kN force as shown in figure. If the value of Young's modulus for the steel is 200 GPa, determine its deformation. (6)



- Q. 2**
- a) Explain the variation of shear force diagram and bending moment diagram at a point or between any two sections of a beam with respect to type of loading? (4)
 - b) A beam 4 m long is overhanging by 1 m and carries load as shown in figure. Calculate the shear force and bending moment at important locations and draw the SFD and BMD for the beam. Also, locate the point of contraflexure. (8)



- Q. 3**
- a) A solid steel shaft has to transmit 100 kW at 160 r.p.m. Permissible shear stress is 70 MPa. Find the suitable diameter of the shaft. The maximum torque (4)

transmitted in each revolution exceeds the mean by 20%.

b) Write the assumptions made in the theory of simple bending. (4)

c) A cantilever beam is rectangular in section, width = 80 mm, depth = 120 mm. (4)
If cantilever is subjected to a point load of 6 kN at free end and the bending stress is not to exceed 40 MPa, find the span of the cantilever beam.

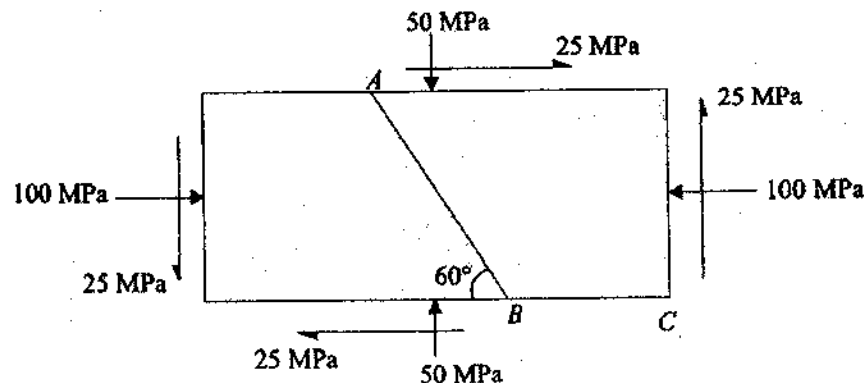
Q. 4 a) A square section 450 mm x 450 mm is subjected to point load of 900 kN at an (4)
eccentricity of 75 mm along one of its axis of cross section. Find the stresses at four corners. Find the maximum uniaxial eccentricity, if permissible tensile stress in masonry is 2.0 N/mm^2 .

OR

a) Write the assumptions made in deriving equation of Crippling load using Euler's theory of long columns. (4)

b) Obtain an expression for Euler's critical load for a column hinged at both ends (8)

Q. 5 a) A point in a strained material is subjected to the stresses as shown in the (6)
figure. Find the normal and shearing stresses on the section AB inclined at an angle of 60° with x-x axis. Also find the resultant stress on the section.



b) An element in a strained body is subjected to a compressive stress of 200 MPa (6)
and a clockwise shear stress of 50 MPa on the same plane. Calculate the values of normal and shear stresses on a plane inclined at 35° with the compressive stress. Also calculate the value of maximum shear stress.

Q. 6 a) Explain: The maximum Principal Stress theory of failure. (4)

b) A circular bar is subjected to a tensile force of 20 kN along with a transverse (8)
shear force of 10 kN. Determine the diameter of bar using Maximum Principal Stress, Maximum Principal Strain, and Maximum Shear Stress failure theory. Take: Yield strength = 250 MPa, factor of safety = 2, and Poisson's ratio = 0.3

----- End of Paper -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Winter End Semester Examination 2019

Course: Civil Engineering

Sem: III

Subject Name: Hydraulics I

Subject Code: BTCVC303

Max Marks: 60

Date: 14 /12/2019

Time: 10 AM to 1 PM

Duration: 3 Hr.

Instructions to the Students:

1. Solve ANY FIVE questions out of the following.
2. The level question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.
5. Solve All Questions in Sequential order.

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	(CO)	Marks
Q.1 Solve the following.	CO 2	12
A) Explain in detail Viscosity, its types and effect of temperature on Viscosity and solve below numerical: Two large Horizontal Plates of infinite extent are 2.5 cm apart and have liquid viscosity of $0.8 \text{ Ns} / \text{m}^2$ filled between them. What force is required to pull a thin plate of negligible thickness and area 0.5 m^2 between two large plates at a speed of 0.5 m/sec . if a) The thin Plate is in the middle of the two large plates?		06
B) Derive an Expression for Capillary rise in Glass Tube and solve below numerical: For having blood sample a fine glass capillary of dia. 2 mm was held touching a freshly punctured finger tip. Estimate in 'ml' the volume of blood sample so drawn. Take the density of blood as $1060 \text{ kg} / \text{m}^3$, surface tension as $5 \times 10^{-2} \text{ N/m}$ and its contact angle with glass as zero degrees.		06
Q.2 Solve the following.	CO 2	12
A) Explain and prove Pascal's Law. Also solve below numerical : A Triangular lamina of base and altitude equal to 3.2m is submerged in water vertically. Determine the Total pressure and centre of pressure, when Base of lamina coincides with free surface.		06
B) Derive an expression to find Metacentric Height of floating body by analytical method. Also solve below numerical: A wooden cylinder of diameter 'd' and length '2d' floats in water with its axis vertical. Is the equilibrium stable? Locate the meta-centre with reference to water surface. Specific gravity of wood is 0.60.		06

- Q. 3 Solve the following.** **CO 4** **12**
- A) Derive Continuity Equation for three dimensional flows in Cartesian coordinate system. **06**
- B) Water flows through a horizontal pipe of diameter 20 cm with a velocity of 20 m/sec. The Pressure at A and B is given as 25 N/cm² and 20 N/cm² respectively. Find a head loss between A and B. **06**
- Q.4 Solve the following.** **CO 3** **12**
- A) An Oil of Specific gravity 0.9 and Viscosity 0.12 Ns / m² flow through a pipe of 2.5 cm diameter with a pressure drop of 0.35 N / cm² in a length of 30m. Determine the discharge ,shear stress intensity at the pipe wall and the power required to maintain the flow. **06**
- B) Crude oil of specific gravity 0.9 and $\nu = 0.15 \text{ cm}^2/\text{sec}$ is flowing through a 25 cm diameter smooth pipe at the rate of 105 LPS. Calculate velocity at a distance of 6 cm from pipe axis, maximum velocity and velocity at the end of laminar sub layer. **06**
- Q. 5 Solve the following.** **CO 3** **12**
- A) Define and explain below Dimensionless Numbers- a) Reynolds Number, b) Froude Number, c) Euler Number, d) Mach Number e) Weber Number. **06**
- B) The Capillary rise 'h' of a fluid of density ρ and surface tension σ in a tube of diameter D depends on contact angle θ and gravity g. Prove by Raleigh's method. **06**
- $$\frac{h}{D} = f_n \left[\frac{s}{\rho g D^2}, \theta \right].$$
- Q. 6 Solve the following.** **CO 3** **12**
- A) Two reservoirs 1 and 2 having level difference between free surfaces of water equal to 5m are connected by pipes AB and BC of diameters 20cm and 30cm respectively. Length of AB is 300m and that of BC is 200m.If flow through the pipeline is 50LPS, Find Loss due to expansion and friction factor f. Draw EG line. **06**
- B) A Siphon Pipe of 20cm diameter 500m long connects two tanks having difference of level in free surface of water of 20m.The summit is at 100 m length from upper tank and 3m above water level of upper tank. Find Q through siphon and pressure at summit .Take $f = 0.02$ **06**

***** End of the paper *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103
Winter End Semester Examination – December 2019

Branch: Civil Engineering

Sem:- III

Subject- Surveying-I

Subject Code (BTCVC304)

Marks: 60

Date:- 17/12/2019

Time:- 3 Hr.

Instructions to the Students:

1. Each question carries 12 marks.
2. Solve Any Five questions of the following.
3. Illustrate your answers with neat sketches, diagram, etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1 Solve Any Two of the following.

12

- A) Two stations A and B are not intervisible due to rising ground between them. Explain with a neat sketch how the line AB can be ranged?
- B) What is mean by offset? List the instruments used for setting the offsets. Describe the construction of open cross staff with neat sketch.
- C) An old map was plotted to a scale of 40m to 1cm. Over the years, this map has been shrinking, and a line originally 200mm long is only 195mm long at present. Again the 20m chain was 5cm too long if the present area of the map measured by the planimeter is 125.50cm², find the true area of the land surveyed.

Q.2 Solve Any Two of the following.

12

- A) The following bearings were observed where local attraction was suspected. Calculate the actual bearings.

Line	FB	BB
AB	40°30'SW	41°15'NE
BC	80°45'SW	79°30'NE
CD	19°30'NE	20°00'SW
DA	80°00'SE	80°00'NW

- B) Define the following terms:

- a) Whole circle bearing
- b) Local attraction
- c) Closing error

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- C) In an anticlockwise traverse ABCA all sides were equal. Magnetic fore bearing of BC was obtained to be $159^{\circ}30'$. The bearing of sun was observed to be $184^{\circ}30'$ at local noon with a prismatic compass. Calculate the magnetic bearing and true bearing of all the sides of a traverse.

Q.3 Solve Any Two of the following.

- A) What is the principle of plane table surveying? List all accessories of Plane Table with a neat sketch and state use of each.
 B) Explain Methods of plan table
 i) Intersection Method
 ii) Radiation Method
 C) How will you set plane table? Explain the procedure.

12

Q.4 Solve Any Two of the following.

- A) Define contour. Explain the characteristics of contour with neat sketch.
 B) During a fly levelling operation the following observations were made
 BS : 0.650, 2.155, 1.405, 2.655, 2.435m
 FS : 2.455, 1.305, 0.555, 2.405m

The first back sight was taken on a BM of RL 90.500m. From the last back sight, it is required to set four pegs each at a distance of 30m on a falling gradient of 1 in 100. Calculate the RLs of these four pegs.

- C) A levelling instrument was set up exactly mid-way between two pegs A and B, 100m apart. The staff reading on A and B were 1.875 and 1.790 respectively. The instrument was then set up at a distance of 10m from A on the line AB. The respective staff readings were 1.630 and 1.560.

Calculate the correct staff reading on A and B when the line of collimation was exactly horizontal.

Q.5 Solve Any Two of the following.

- A) i) What are the different checks in closed traverse in theodolite traversing.
 ii) How will you measure the horizontal angle by repetition method? Explain with an example.

12

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- B) The following observations were taken from stations P and Q. Calculate the length and bearing of AB, and also the angles PAB and QBA.

Line	Length(m)	Bearings
PA	125.0	$60^{\circ}30'SW$
PQ	200.0	$30^{\circ}30'NE$
QB	150.5	$50^{\circ}15'NW$

- C) The following records are obtained in a traverse survey, where the length and bearing of the last line were not recorded. Compute the length and bearing of line DA.

Line	Length (m)	Bearing
AB	75.50	$30^{\circ}24'$
BC	180.50	$110^{\circ}36'$
CD	60.25	$210^{\circ}30'$
DA	?	?

Q.6 Solve the following.

- A) Write short note on:
 i) Factors necessary for the selection of good alignment for a road.
 ii) Setting out a building with an example.

- B) Define curve, how it is designated? What are the different classification of a curve explain by sketch.

=====Paper End =====

12

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**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL
UNIVERSITY, LONERE - RAIGAD -402 103
Winter Semester Examination - Dec. - 2019**

Branch: Civil Engineering
Subject:- Building Construction (BTCVC305)
Date:- 19/12/2019

Sem.:- III
Marks: 60
Time:- 3 Hr.

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it

(Marks)

- Q.1. a) Describe the characteristics of good stone masonry. (06)
- b) Differentiate between English Bond and Flemish Bond, and also draw neat sketches showing plan of consecutive courses 1 and 1/2 brick thick wall in single and double Flemish bond. (06)
- Q.2. a) Discuss the properties of fresh and hardened concrete. (06)
- b) Explain the purpose of admixture. State any four admixtures used in Concrete. (06)
- Q.3. a) Sketch and label the various components of an arch. (06)
- b) Explain the necessity of lintel along with its classification by material and Draw a labeled sketch of reinforced concrete lintel with chajja projection. (06)
- Q.4. a) Draw a neat sketch of fully paneled door in elevation for a opening size of 1200 mm x 2200 mm and enlist the various fixtures and fastenings for doors and windows. (06)
- b) Draw labeled sketch (sectional elevation) of dogged legged staircase for residential building. (06)
- Q.5. a) List and explain any four types of floor finishes with their suitability. (06)
- b) Explain the schematic process of erection work in high rise buildings. (06)
- Q.6. Solve any four of the following (4x3 M=12)
- a) Write a short note on the importance of partition walls with mentioning the types.
 - b) Explain the field tests for cement.
 - c) State the functions of window sill and lintel.
 - d) Write a short notes on ramps construction.
 - e) Suggest the roofing material for various types of pitched roofs with justification.
 - f) Write the advantages of pre-engineered buildings

Paper End

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD -402 103
Winter Semester Examination – Dec.- 2019**

SX

Branch: Civil Engineering
Subject: - Engineering Geology (BTCVC306)
Date:-21/12/2019

Sem.: -III
Marks: 60
Time:- 3 Hr.

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

(Marks)

Q.1. Attempt any two questions of the following.

(12)

- A) Discuss Central and Fissure type of eruption and its products.
- B) Describe any three depositional and erosional features developed by river.
- C) Explain Internal Structure of the Earth?

Q.2. Attempt any two questions of the following.

(12)

- A) Explain physical properties used for identification of minerals with suitable examples.
- B) What is metamorphism? Discuss the various agents of metamorphism?
- C) Write in brief about diagenesis process of sedimentary rocks.

Q.3.

(12)

- A) Illustrate various types of faults with appropriate diagrams.
- B) Define fold and describe classification of folds with neat labeled diagrams.

Q.4.

(12)

- A) Describe various methods dressing of building stones.
- B) What are the types of Aquifer with neat labelled diagram?

Q.5.

(12)

- A) Write a note on types of dam with suitable examples.
- B) Explain importance of electric resistivity methods in civil engineering.

Q.6.

(12)

- A) What are the main objects need to be recognized in geological investigation?
- B) Explain the methods of geological investigation.

-----PAPER END-----

