KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

CBCS SCHEME

USN [　　　　　　　　　]   **18MAT31**

Third Semester B.E. Degree Examination, Feb./Mar. 2022
Transform Calculus, Fourier Series and Numerical Techniques

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Evaluate (i) $L\left\{\dfrac{\cos 2t - \cos 3t}{t}\right\}$ (ii) $L(t^2 e^{-3t} \sin 2t)$ **(06 Marks)**

   b. If $f(t) = \begin{cases} t, & 0 \le t \le a \\ 2a - t, & a \le t \le 2a \end{cases}$, $f(t + 2a) = f(t)$ then show that $L(f(t)) = \dfrac{1}{s^2}\tanh\left(\dfrac{as}{2}\right)$ **(07 Marks)**

   c. Solve by using Laplace Transforms
   $$\dfrac{d^2 y}{dt^2} + 4\dfrac{dy}{dt} + 4y = e^{-t}, \quad y(0) = 0, \ y'(0) = 0$$ **(07 Marks)**

OR

2 a. Evaluate $L^{-1}\left(\dfrac{4s + 5}{(s+1)^2(s+2)}\right)$ **(06 Marks)**

   b. Find $L^{-1}\left(\dfrac{s}{(s^2 + a^2)^2}\right)$ by using convolution theorem.   **(07 Marks)**

   c. Express $f(t) = \begin{cases} \sin t, & 0 \le t < \pi \\ \sin 2t, & \pi \le t < 2\pi \\ \sin 3t, & t \ge 2\pi \end{cases}$
   in terms of unit step function and hence find its Laplace Transform.   **(07 Marks)**

Module-2

3 a. Obtain fourier series for the function $f(x) = |x|$ in $(-\pi, \pi)$ **(06 Marks)**

   b. Expand $f(x) = \dfrac{(\pi - x)^2}{4}$ as a Fourier series in the interval $(0, 2\pi)$ and hence deduce that
   $$\dfrac{\pi^2}{12} = \dfrac{1}{1^2} - \dfrac{1}{2^2} + \dfrac{1}{3^2} - \dfrac{1}{4^2} + \dots\dots\dots$$ **(07 Marks)**

   c. Express y as a Fourier series upto the second harmonic given :

x:	0	60	120	180	240	300
y:	4	3	2	4	5	6

        (07 Marks)

OR

4 a. Find the Half-Range sine series of $\pi x - x^2$ in the interval $(0, \pi)$ **(06 Marks)**

   b. Obtain fourier expansion of the function $f(x) = 2x - x^2$ in the interval $(0, 3)$.   **(07 Marks)**

c. Obtain the Fourier expansion of y upto the first harmonic given :

x	0	1	2	3	4	5
y	9	18	24	28	26	20

(07 Marks)

Module-3

5 a. If $f(x) = \begin{cases} 1, & |x| < a \\ 0, & |x| > a \end{cases}$, find the Fourier transform of f(x) and hence find the

value of $\int_0^\infty \frac{\sin x}{x} dx$ (06 Marks)

b. Find the infinite Fourier cosine transform of $e^{-\alpha x}$. (07 Marks)

c. Solve using z-transform $y_{n+2} - 4y_n = 0$ given that $y_0 = 0, y_1 = 2$ (07 Marks)

OR

6 a. Find the fourier sine transform of $f(x) = e^{-|x|}$ and

hence evaluate $\int_0^\infty \frac{x \sin mx}{1 + x^2} dx$; m > 0. (06 Marks)

b. Obtain the z-transform of $\cos n\theta$ and $\sin n\theta$. (07 Marks)

c. Find the inverse z-transform of

$$\frac{4z^2 - 2z}{z^3 - 5z^2 + 8z - 4}$$ (07 Marks)

Module-4

7 a. Solve $\frac{dy}{dx} = x^3 + y$, y(1) = 1 using Taylor's series method considering up to fourth degree

terms and find y(1.1). (06 Marks)

b. Given $\frac{dy}{dx} = 3x + \frac{y}{2}$. y(0) = 1 compute y(0.2) by taking h = 0.2 using Runge – Kutta

method of fourth order. (07 Marks)

c. If $\frac{dy}{dx} = 2e^x - y$, y(0) = 2, y(0.1) = 2.010, y(0.2) = 2.040 and y(0.3) = 2.090, find y(0.4)

correct to 4 decimal places using Adams-Bashforth method. (07 Marks)

OR

8 a. Use fourth order Runge-Kutta method, to find y(0.8) with h = 0.4, given $\frac{dy}{dx} = \sqrt{x + y}$,

y(0.4) = 0.41 (06 Marks)

b. Use modified Euler's method to compute y(20.2) and y(20.4) given that $\frac{dy}{dx} = \log_{10}\left(\frac{x}{y}\right)$ with

y(20) = 5 Taking h = 0.2. (07 Marks)

c. Apply Milne's predictor-corrector formulae to compute y(2.0) given $\frac{dy}{dx} = \frac{x + y}{2}$ with

x	0.0	0.5	1.0	1.5
y	2.000	2.6360	3.5950	4.9680

(07 Marks)

Module-5

9 a. Using Runge-Kutta method, solve

$$\frac{d^2y}{dx^2} = x\left(\frac{dy}{dx}\right)^2 - y^2 \text{ , for } x = 0.2, \text{ correct to four decimal places, using initial conditions}$$

$y(0) = 1, y'(0) = 0$ **(07 Marks)**

b. Derive Euler's equation in the standard form viz, $\frac{\partial f}{\partial y} - \frac{d}{dx}\left(\frac{\partial f}{\partial y'}\right) = 0$ **(07 Marks)**

c. Find the extremal of the functional $\int_{x_1}^{x_2}(y^2 + y'^2 + 2ye^x)\,dx$ **(06 Marks)**

OR

10 a. Given the differential equation $2\frac{d^2y}{dx^2} = 4x + \frac{dy}{dx}$ and the following table of initial values:

x	1	1.1	1.2	1.3
y	2	2.2156	2.4649	2.7514
y'	2	2.3178	2.6725	2.0657

Compute y(1.4) by applying Milne's Predictor-corrector formula. **(07 Marks)**

b. Prove that geodesics of a plane surface are straight lines. **(07 Marks)**

c. On what curves can the functional $\int_0^1 (y'^2 + 12xy)\,dx$ with $y(0) = 0$, $y(1) = 1$ can be extremized? **(06 Marks)**

* * * * *

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

3

CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

18MATDIP31

Third Semester B.E. Degree Examination, Feb./Mar. 2022
Additional Mathematics – I

Time: 3 hrs.

Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Find the modulus and amplitude of the complex number : $\dfrac{(2-3i)(2+i)^2}{1+i}$. **(07 Marks)**

   b. Prove that $\left(\dfrac{1+\cos\theta+i\sin\theta}{1+\cos\theta-i\sin\theta}\right)^n = \cos n\theta + i\sin n\theta$. **(06 Marks)**

   c. Show that the vectors $\vec{a}-2\vec{b}+3\vec{c},\ -2\vec{a}+3\vec{b}-4\vec{c},\ -\vec{b}+2\vec{c}$ are coplanar. **(07 Marks)**

OR

2 a. Given $\vec{a}=2\hat{i}+2\hat{j}-\hat{k},\ \vec{b}=6\hat{i}-3\hat{j}+2\hat{k}$. Find : i) $\vec{a}\cdot\vec{b}$ ii) $\vec{a}\times\vec{b}$ iii) $|\vec{a}\times\vec{b}|$. **(07 Marks)**

   b. Determine the value of λ, so that $\vec{a}=2\hat{i}+\lambda\hat{j}-\hat{k}$, and $\vec{b}=4\hat{i}-2\hat{j}-2\hat{k}$, are perpendicular. **(06 Marks)**

   c. Express $1-i\sqrt{3}$ in the polar form and hence find its modulus and amplitude. **(07 Marks)**

Module-2

3 a. Using Euler's theorem, prove that $xu_x + yu_y = -3\cot u$ where $u = \sin^{-1}\left(\dfrac{x^2 y^2}{x+y}\right)$. **(07 Marks)**

   b. Using Maclaurin's series, prove that $\sqrt{1+\sin 2x} = 1 + x - \dfrac{x^2}{2} - \dfrac{x^3}{3} + \dfrac{x^4}{24} + \dots$. **(06 Marks)**

   c. If $u = x + 3y^2,\ v = 4x^2 yz,\ w = 2z^2 - xy$, evaluate $\dfrac{\partial(u,v,w)}{\partial(x,y,z)}$ at the point $(1,-1,0)$. **(07 Marks)**

OR

4 a. Obtain Maclaurin's series expansion for the function e^x upto x^4. **(07 Marks)**

   b. If $u = \sin^{-1}\left[\dfrac{x^3+y^3}{x+y}\right]$ prove that $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} = 2\tan u$. **(06 Marks)**

   c. If $u = f\left(\dfrac{x}{y}, \dfrac{y}{z}, \dfrac{z}{x}\right)$, prove that $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} + z\dfrac{\partial u}{\partial z} = 0$. **(07 Marks)**

Module-3

5 a. A particle moves along the curve $x = (1-t^3),\ y = (1+t^2),\ z = (2t-5)$ determine its velocity and acceleration at t = 1 sec. **(07 Marks)**

   b. If $\vec{F} = 2x^2\hat{i} - 3yz\hat{j} + xz^2\hat{k}$, and $\phi = 2z - x^3 y$, find $\vec{F}\cdot(\nabla\phi)$ and $\vec{F}\times(\nabla\phi)$ at $(1,-1,1)$. **(06 Marks)**

   c. Find the constants a, b, c so that $\vec{f} = (x+2y+az)\hat{i} + (bx-3y-z)\hat{j} + (4x+cy+2z)\hat{k}$ is irrotational. **(07 Marks)**

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

18MATDIP31

OR

6 a. Find the directional derivate of $\phi = x^3yz + 4xz^2$ at $(1,-2,-1)$ along $\vec{a} = 2\hat{i} - \hat{j} - 2\hat{k}$ (07 Marks)

b. Find curl $\vec{f}$ given that $\vec{f} = xyz^2\,\hat{i} + xy^2z\,\hat{j} + x^2yz\,\hat{k}$.   (06 Marks)

c. If $\vec{f} = x^2\hat{i} + y^2\hat{j} + z^2\hat{k}$ and $\vec{g} = yz\hat{i} + zx\hat{j} + xy\hat{k}$. Show that $\vec{f} \times \vec{g}$ is a solenoidal vector.   (07 Marks)

Module-4

7 a. Obtain the reduction formula, $I_n = \int \cos^n x\,dx$, where n is a positive integer.   (07 Marks)

b. Evaluate $\int_1^{\sqrt{y}}\int xy\,dydx$.   (06 Marks)

c. Evaluate $\int_1^0 \int_1^0 \int_1^0 (x + y + z)\,dxdydz$.   (07 Marks)

OR

8 a. Evaluate : $\int_{\pi/6}^{0} \sin^6(3x)\,dx$.   (07 Marks)

b. Evaluate : $\int_{\pi}^{0} x\sin^4 x \cos^6 x\,d x$.   (06 Marks)

c. Evaluate $\int_1^0 \int_y^1 \int_0^0 xyz\,dxdydz$.   (07 Marks)

Module-5

9 a. Solve : $(2x + y + 1)\,dx + (x + 2y + 1)\,dy = 0$.   (07 Marks)

b. Solve : $(4xy + 3y^2 - x)\,dx + (x^2 + 2xy)\,dy = 0$.   (06 Marks)

c. Solve : $y(2xy + e^x)\,dx - e^x\,dy = 0$.   (07 Marks)

OR

10 a. Solve : $(5x^4 + 3x^2y^2 - 2xy^3)dx + (2x^3y - 3x^2y^2 - 5y^4)dy = 0$.   (07 Marks)

b. Solve : $y(2xy + 1)dx - x\,dy = 0$.   (06 Marks)

c. Solve : $\dfrac{dy}{dx} + y\cot x = \cos x$.   (07 Marks)

* * * * *

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

CBCS SCHEME

Third Semester B.E. Degree Examination, Feb./Mar. 2022
Strength of Materials

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Derive the expression for extension of rectangular tapering bar subjected to an axial load P. **(07 Marks)**

   b. Explain the terms :
      (i) Modulus of Elasticity   (ii) Modulus of Rigidity   (iii) Poisson's Ratio. **(03 Marks)**

   c. A round bar with stepped portion is subjected to the forces as shown in Fig.Q1(c). Determine the magnitude of force P, such that the net deformation in the bar does not exceed 1 mm. E for steel is 200 GPa, E for Aluminium is 70 GPa. Large end diameter and small end diameter of the tapering bar are 40mm and 12.5mm respectively.
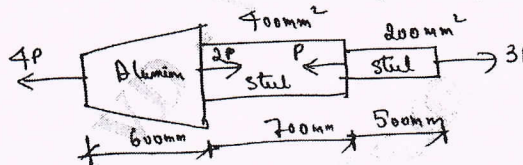

Fig.Q1(c)   **(10 Marks)**

OR

2 a. Explain the St. Venant's Principle. **(04 Marks)**

   b. A steel sleeve is slipped over a brass bolt and held in place by a nut. Compute the temperature rise required to stress the brass to 27.5 N/mm^2 in compression. Use the following data: $A_s = 500mm^2$, $A_b = 480\ mm^2$, $E_s = 19.6 \times 10^4\ N/mm^2$, $E_b = 8.82 \times 10^4\ N/mm^2$ $\alpha_s = 12 \times 10^{-6}$ cm/cm/°C, $\alpha_b = 19 \times 10^{-6}$ cm/cm/°C. **(08 Marks)**

   c. Derive the relationship between the 3 elastic constants E, G, K. **(08 Marks)**

Module-2

3 a. Show that the planes of maximum shear stresses are inclined at 45° with the principal planes. **(06 Marks)**

   b. The state of stress in a two-dimensionally stressed body is shown in Fig.Q3(b). Determine the principal planes, principal stresses, maximum shear stress and their planes.
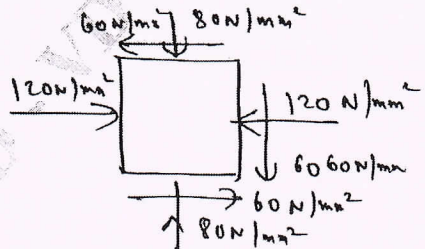

Fig.Q3(b)   **(14 Marks)**

OR

4 a. Derive Lame's equation for radial and hoop stresses for thick cylinder subjected to internal and external fluid pressures. **(08 Marks)**

b. A thick cylindrical vessel is 250 mm in internal diameter and has 50mm thick walls. It is subjected to an internal pressure of 10 MPa due to the movement of fluid. Find the maximum hoop stress developed. Also calculate the radial and hoop stress at a point 20mm from the inside surface. **(08 Marks)**

c. A thin cylinder is 3m in length, 1m in diameter and has a metal thickness of 12mm in its walls. Determine the stresses (Hoop and Longitudinal) and strain along the length when subjected to an internal pressure of 1.5 MPa. Take E = 210 GPa, $\mu = 0.25$. **(04 Marks)**

Module-3

5 a. For a cantilever beam subjected to a UDL of intensity W/unit length throughout, plot the SFD and BMD. **(06 Marks)**

b. For the beam shown in Fig.Q5(b) construct the SFD and BMD indicating salient values. Find the point of contraflexure, if any.
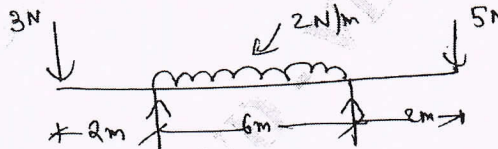

Fig.Q5(b) **(14 Marks)**

OR

6 a. For a simply supported beam subjected to uniformly varying load of W/unit length plot the SFD and BMD. **(08 Marks)**

b. For the beam shown in Fig.Q6(b), find the load 'P' to have equal reactions at A and C. Draw the Binding Moment and Shear Force diagram indicating values at significant points. Locate the point of contraflexure. **(12 Marks)**
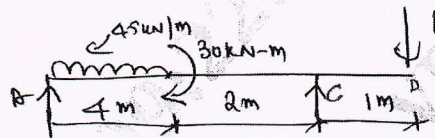
Fig.Q6(b)

Module-4

7 a. Define Section Modulus and Moment of Resistance. **(04 Marks)**

b. Derive the relationship between Bending Stresses and Radius of curvature

ie., $\dfrac{\sigma}{y} = \dfrac{E}{R}$ **(06 Marks)**

c. An unsymmetric I-section is subjected to a bending moment of 20 kN-m. The top flange being in compression. Draw the bending stress variation diagram across the section marking salient points and compute the total moment resisted by the top flange. Refer Fig.Q7(c).

Fig.Q7(c) **(10 Marks)**

OR

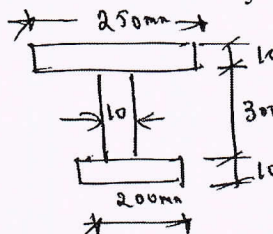8 a. Compare the weight of solid shaft to that of the hollow shaft of the same material, having the same length to transmit power at a given speed. Take inside diameter of hollow shaft as 0.5 times the outer diameter. **(10 Marks)**

   c. Determine the diameter of the solid shaft which will transmit 440 kW at 280 rpm, if the maximum torsional shear stress is to be limited to 40 N/mm^2. Assume G = 84 kN/mm^2 and length of shaft is 1m with angle of twist of 1 degree. **(10 Marks)**

Module-5

9 a. For a simply supported beam subjected to an UDL of 'W' N/m determine the magnitude of maximum deflection using Double Integration method. **(10 Marks)**

   b. An overhanging beam ABC is loaded as shown in Fig.Q9(b). Determine the slope and deflection at its free end C. Take E = 2×10^5 N/mm^2 and I = 5×10^8 mm^4.
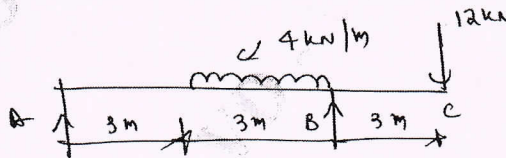
Fig.Q9(b) **(10 Marks)**

OR

10 a. Derive the Euler's equation for buckling load on a column with one end fixed and other end hinged. **(10 Marks)**

    b. A hollow cast iron column whose outside diameter is 200mm has a thickness of 20mm. It is 4.5m long and is fixed at both ends. Calculate the safe load by Rankine's formula using a FOS of 4. Calculate ratio of Euler's and Rankine's critical loads for cast iron,

    take $\alpha = \dfrac{1}{1600}$, $\sigma_c = 550$ N/mm^3, E = 8×10^4 N/mm^2. **(10 Marks)**

* * * * *

2

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

CBCS SCHEME

USN | | | | | | | | | |

18CV33

Third Semester B.E. Degree Examination, Feb./Mar. 2022
Fluids Mechanics

Time: 3 hrs.
Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1. a. Define fluid. Distinguish between solids, liquids and gases. **(06 Marks)**
   b. Define capillarity. Obtain an expression for capillary rise or drop for a given liquid of specific weight 'r_L' and 'd' diameter of glass tube, angle of contact is 'θ', 'σ' represents the surface tension force

   $$h = \frac{4\sigma\cos\theta}{r_L \cdot d}$$ **(06 Marks)**

   c. A 90 N rectangular solid block slides down a 30° inclined plane. The plane is lubricated by a 3 mm thick film of oil of relative density 0.90 and viscosity 0.8 Ps-sec. If the contact area is 0.3 m², estimate the terminal velocity of block. **(08 Marks)**

OR

2. a. The pressure 3m below the free surface of a liquid is 13.72 kN/m². Determine its specific weight and relative density. **(06 Marks)**
   b. Explain gauge, absolute and vacuum pressure. How do you determine the absolute pressure from the gauge pressure? **(06 Marks)**
   c. Find out the differential reading 'h' of an inverted U-tube manometer containing oil of specific gravity 0.7. The manometric liquid when connected across pipes 'A' and 'B' is shown in Fig.Q2(c). Convey liquids of specific gravity 1.2 and 1.0 (water) which are immiscible with manometric liquid. Pipes 'A' and 'B' are located at the same level and assume the pressures at 'A' and 'B' are equal.
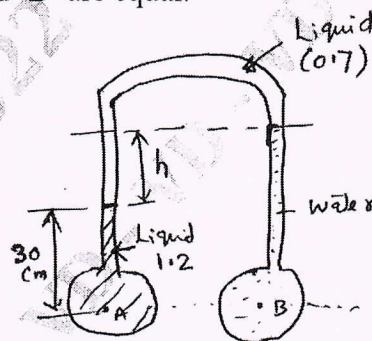
Fig.Q2(c) **(08 Marks)**

Module-2

3. a. Define the following and mention their SI units:
   (i) Total Pressure (ii) Centre of pressure (iii) Total acceleration **(06 Marks)**
   b. An isosceles triangular plate of base 4m and altitude 4m is immersed vertically in fluid with a specific gravity 0.8. The base of the triangle is touching the top of the surface fluid horizontally and rest of its portion is within the fluid. Determine the total pressure and centre of pressure of the plate from the top liquid level. **(08 Marks)**
   c. Write short notes on: (i) Lagrangian method (ii) Eulerian method (iii) Flow net **(06 Marks)**

OR

4 a. A cylindrical gate is 3m long and has water on its both sides as shown in Fig.Q4(a). Determine the magnitude and direction of the resultant hydrostatic force exerted on the gate.

Fig.Q4(a)   (08 Marks)

b. Distinguish between:
(i)   Steady flow and unsteady flow
(ii) Rotational flow and irrotational flow   (04 Marks)

c. If φ = 3xy, find x and y components of velocity at (1, 3) and (3, 3). Determine the discharge passing between streamlines passing through these points.   (08 Marks)
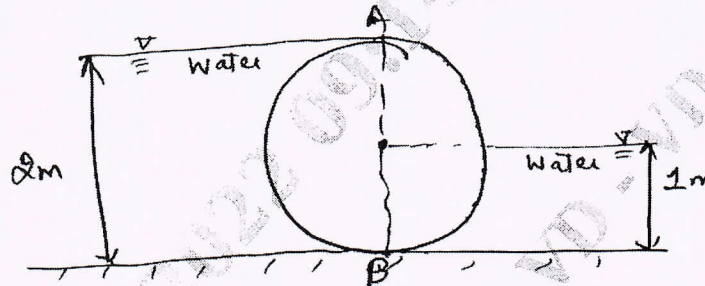
Module-3

5 a. State and prove Euler's equation of motion and derive Bernoulli's energy equation from it. Mention the assumptions.   (10 Marks)

b. For the horizontal venturimeter of 150 mm × 75 mm, determine the reading of the mercury manometer, if the pipe carries 40 LPS of water. Given C_d = 0.97. Sp.Gr. mercury = 13.6.   (10 Marks)

OR

6 a. 300 LPS of water is flowing in a pipe having diameter of 300 mm. If the pipe is bent by 120°, find the magnitude and direction of the resultant force on the bend. The pressure of the water flowing is 400 kN/m². Take specific weight of water = 9.81 kN/m³.   (08 Marks)

b. With a neat sketch, describe the construction and working of a pitot tube.   (06 Marks)

c. An orifice meter consists of 100 mm diameter in a 300 mm diameter pipe having a coefficient of discharge of 0.65. The pipe delivers oil of relative density 0.9. The pressure difference on the two sides of the orifice plate measured by mercury differential manometer is 70 cm. Find the rate of discharge in litres per second.   (06 Marks)

Module-4

7 a. Distinguish between the following:
(i)   Notch and weir
(ii)   Mouthpiece and orifice
(iii) Broad crested weir and sharp crested weir
(iv)   Triangular notch and Cipolletti notch   (08 Marks)

b. Explain the classification of Notches and Weirs.   (06 Marks)

c. A discharge of 0.08 m³/sec was measured over a 60° angled notch. While measuring the head over notch an error of 2 mm was made. Determine the percentage error in discharge if the coefficient of discharge for the notch is 0.6.   (06 Marks)

OR

8 a. Oil flows through a 25 mm diameter orifice under a head of 5.5 m at a rate of 3 LPS. The jet strikes a wall 1.5 m away and 120 mm vertically below the centerline of the contracted jet. Calculate the coefficients of velocity, contraction and discharge.   (06 Marks)

b. A trapezoidal notch has a base width of 0.75 m and a side slope of 1 horizontal to 2 vertical. Calculate the discharge over the notch for a head of 0.50 m by assuming $C_d = 0.63$.

(06 Marks)

c. Write a short note on ventilation of Weirs mentioning its type and effect on discharge measurement.

(08 Marks)

Module-5

9 a. Derive an expression for the loss of head due to sudden expansion in the pipe. **(08 Marks)**

b. Explain Hardy Cross method for pipe network analysis. **(06 Marks)**

c. A cast iron pipe ($E = 1.0 \times 10^{11}$ Pa) is a 0.9 m in diameter and carries water ($K = 2.0 \times 10^9$ Pa) at a velocity of 2.6 m/s. A valve in this pipe is instantaneously closed bringing the flow to a sudden stop at the valve end. Estimate the water hammer head produced due to this action. The pipe thickness is 1.25 cm and the pipe can be treated as elastic. **(06 Marks)**

OR

10 a. A 6 cm diameter pipe has a discharge of water of 450 Litres/minute. At a section the pipe has a sudden expansion to a size of 9 cm diameter. If the pressure just upstream of the expansion is 20 KN/m^2, calculate the pressure just after the expansion. Assume the pipe to be horizontal. Given $r_w = 9.81$ kN/m^3. **(06 Marks)**

b. Explain the following terms with a neat sketch:
   (i) Pipes in series   (ii) Total energy line
   (iii) Water Hammer in pipes   (iv) Hydraulic gradient line **(08 Marks)**

c. The velocity of water in a 60 cm diameter and 1.5 cm thick cast iron pipe ($E = 1.04 \times 10^{11}$ Pa) is changed from 3 m/sec to zero in 0.8 sec by closure of a valve. What will be the corresponding pressure rise if given bulk modulus of elasticity of water is 2.11×10^9 N/m^2. **(06 Marks)**

* * * * *

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

CBCS SCHEME

USN | | | | | | | | | |

Third Semester B.E. Degree Examination, Feb./Mar. 2022
Building Materials and Construction

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1. a. What do you mean by Dressing of Stones? Explain types of dressing of stones. **(08 Marks)**
   b. Discuss the characteristics of good building stone. **(08 Marks)**
   c. Mention the qualities of good bricks. **(04 Marks)**

OR

2. a. Explain with neat sketch, the construction and working of a clamp, for burning of bricks. **(08 Marks)**
   b. Briefly discuss the advantages of cement concrete blocks. **(06 Marks)**
   c. Discuss the importance of size, shape and texture of coarse aggregates. **(06 Marks)**

Module-2

3. a. Define Foundation. Discuss functions and causes for the failure of foundation. **(08 Marks)**
   b. Explain different methods involved in site exploration for foundation. **(06 Marks)**
   c. With neat sketches discuss the features of Flemish bond and English bond of one and half thick brick wall. **(06 Marks)**

OR

4. a. Explain types of joints in stone masonry with neat sketches. **(08 Marks)**
   b. State the comparative merits and demerits of stone and brick masonry. **(06 Marks)**
   c. Describe method of construction and advantages of cavity and partition walls. **(06 Marks)**

Module-3

5. a. With neat sketches, explain various components of segmental arch. **(06 Marks)**
   b. Distinguish clearly between Lintel and an Arch. How does flat stone arch differs from a stone lintel? **(06 Marks)**
   c. Explain briefly the definition and functions of the Chejja, Balcony and Canopy. **(08 Marks)**

OR

6. a. Mention requirement of good floor, describe the method of constructing cement concrete flooring. **(08 Marks)**
   b. With the help of neat sketch, explain components of Queen Post Truss. **(06 Marks)**
   c. What are the factors to be considered while selecting roof covering? **(06 Marks)**

Module-4

7. a. Explain the following doors with neat sketches:
   (i) Fully paneled door
   (ii) Revolving door **(06 Marks)**
   b. Discuss the following windows with neat sketches:
   (i) Bay window   (ii) Corner window
   (iii) Louvered window   (iv) Pivoted window **(08 Marks)**
   c. Describe briefly classification of stairs. **(06 Marks)**

OR

8   a.   Plan a dog-legged stair for a building in which the vertical distance between the floor is 3.6 meter. The stair wall measure 2.5 × 5.0 meter.   **(08 Marks)**

b.   What are the types of Scaffolding commonly used?   **(08 Marks)**

c.   Write explanatory note on shoring and under pinning form work.   **(04 Marks)**

Module-5

9   a.   Write the objectives of plastering and requirement of good plaster.   **(08 Marks)**

b.   Discuss the defects in plastering.   **(07 Marks)**

c.   Explain the method of applying stucco plastering.   **(05 Marks)**

OR

10   a.   Discus the causes, effects and methods of controlling dampness in building.   **(08 Marks)**

b.   Mention the objectives of painting and point out the characteristics of an ideal paint.   **(06 Marks)**

c.   Describe the procedure of painting on wood surface and inner walls of residential building.   **(06 Marks)**

* * * * *

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

CBCS SCHEME

Third Semester B.E. Degree Examination, Feb./Mar.2022
Basic Surveying

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain the classification of survey. **(04 Marks)**

    b. Explain the basic principles of surveying with sketches. **(06 Marks)**

    c. What is conventional symbols? With neat sketches show any six conventional symbols used in surveying. **(10 Marks)**

OR

2 a. What is ranging? Explain indirect ranging with neat sketch. **(06 Marks)**

    b. With neat sketches, explain obstacles in chaining. **(08 Marks)**

    c. A steel tape 20 m long standardized at 55°F with a pull of 100 N was used for measuring base line. Find the correction per tape length, if the temperature at the time of measurement was 80°F and pull exerted was 160 N. Weight of 1 cubic cm of steel is 0.0786 N. Weight of tape is 8 N and $E = 2.1 \times 10^5$ N/mm². Co-efficient of expansion of tape per 1°F $= 6.2 \times 10^{-6}$. **(06 Marks)**

Module-2

3 a. Define the terms : (i) True bearing (ii) Magnetic bearing (iii) Magnetic declination and (iv) Angle of dip. **(06 Marks)**

    b. Differentiate between prismatic and surveyor compass (any 4). **(06 Marks)**

    c. The following bearings were observed in running a closed traverse:

Line	F.B.	B.B.
AB	75°5'	254°20'
BC	115°20'	296°35'
CD	165°35'	345°35'
DE	224°50'	44°5'
EA	304°50'	125°5°

At what station do you suspect the local attraction? Determine the correct magnetic bearings. If declination was 5°10' E. What are the true bearings? **(08 Marks)**

OR

4 a. Explain the Bowditch's and Transit method of adjusting closed traverse. **(06 Marks)**

    b. Explain closed and open traverse with neat sketch. **(06 Marks)**

    c. The following records were obtained in a compose traverse. Compute the length and bearing of DA:

Line	Length (m)	Bearing
AB	75.5	30°24'
BC	180.5	110°36'
CD	60.25	210°30'
DA	?	?

(08 Marks)

Module-3

5 a. Define the following terms:
     (i) Back sight   (ii) Fore sight   (iii) Benchmark   (iv) Reduced level. **(06 Marks)**

    b. What are the methods of leveling? Explain briefly. **(06 Marks)**

c. The following consecutive readings were taken with a level and 5 m leveling staff on continuously sloping ground at a common interval of 20 m. 0.385, 1.030, 1.925, 2.825, 3.730, 4.685, 0.625, 2.005, 3.110 and 4.485 m. The reduced level of first point was 208.125 m. Rule out a page of level field book and enter the above readings. Calculate the reduced levels of points by rise and fall method and apply check. Calculate also the gradient of line joining the first and last point. **(08 Marks)**

OR

6 a. Illustrate with neat sketches:
   - (i)   Profile leveling
   - (ii) Differential leveling
   - (iii) Fly leveling and
   - (iv) Reciprocal leveling   **(08 Marks)**

   b. Enumerate the errors in leveling.   **(04 Marks)**

   c. The following notes refer to reciprocal levels taken with one level:

Inst. at	P	Q	Remarks
P	1.824	2.748	Distance between P and Q = 1010 m
Q	0.928	1.606	RL of P = 126.386

Find :
(i) True RL of Q   (ii) The combined correction for curvature and refraction and
(iii) The angular error in the collimation adjustment of the instrument.   **(08 Marks)**

Module-4

7 a. Explain with neat sketch, the procedure for,
   - (i)   Radiation method
   - (ii) Intersection method and
   - (iii) Traversing method in plane table surveying   **(09 Marks)**

   b. State and explain solution to two-point problem.   **(08 Marks)**

   c. Define Re-section.   **(03 Marks)**

OR

8 a. State and explain solution to three point problem.   **(10 Marks)**

   b. List the advantages, disadvantages and errors in plane table surveying.   **(10 Marks)**

Module-5

9 a. Discuss the methods for determining areas and volume.   **(08 Marks)**

   b. Define a contour. List the uses of contour maps.   **(04 Marks)**

   c. The following perpendicular offsets were taken from a chain line to a hedge:

Chainage (m)	0	15	30	45	60	70	80	100	120	140
Offsets (m)	7.6	8.5	10.7	12.8	10.6	9.5	8.3	7.9	6.4	4.4

Calculate the area between survey line, the hedge and end offsets by,
(i) Trapezoidal rule.   (ii) Simpson's rule.   **(08 Marks)**

OR

10 a. What are the characteristics of contour? Explain with sketches.   **(07 Marks)**

   b. List the methods of contouring. Explain briefly.   **(05 Marks)**

   c. A railway embankment 400 m long is 12 m wide at the formation level and has side slope of 2 to 1. The ground levels at every 100 m along the centre line are as under.

Distance (m)	0	100	200	300	400
R.L (m)	204.8	206.2	207.5	207.2	208.3

The formation level at zero chainage is 207.00 and the embankment has a rising gradient of 1 in 100. The ground is level across the centre line. Calculate the volume of earth work by,
(i) Trapezoidal formula.   (ii) Prismoidal formula.   **(08 Marks)**

* * * * *

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

USN | | | | | | | | | |

18CV36

Third Semester B.E. Degree Examination, Feb./Mar. 2022
Engineering Geology

Time: 3 hrs.

Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Using diagrams and explanation, describe the Internal Structure and Composition of Earth. **(10 Marks)**
   b. Write the Physical properties, Chemical composition and uses of Feldspar group of Minerals. **(06 Marks)**
   c. Differentiate between Rock Forming Mineral and Ore Mineral. **(04 Marks)**

OR

2 a. Discuss the relevance of Geology in Civil Engineering Profession. **(08 Marks)**
   b. Using appropriate examples from the Mineral Kingdom, describe the physical properties of Minerals. **(08 Marks)**
   c. Differentiate between Calcite and Magnetite. **(04 Marks)**

Module-2

3 a. Mention the Mineralogical composition texture, Origin and uses of
   i) Granite   ii) Sandstone   iii) Marble   iv) Shale. **(08 Marks)**
   b. Explain any three types of Drainage patterns. **(06 Marks)**
   c. With neat sketch, explain the Soil profile. **(06 Marks)**

OR

4 a. Give a detailed account of Structure of Sedimentary Rocks. **(08 Marks)**
   b. Explain the types of Metamorphism. **(06 Marks)**
   c. Explain the types of Physical Weathering. **(06 Marks)**

Module-3

5 a. Give a detailed classification of folds and their Engineering considerations. **(08 Marks)**
   b. Differentiate between Horst and Graben. **(06 Marks)**
   c. List the various Coastline Protection Structures. **(06 Marks)**

OR

6 a. Describe the different types of the joints and mention their Engineering considerations. **(08 Marks)**
   b. Give the detailed account of types of Unconformities. **(06 Marks)**
   c. Write short note on Rock Quality Designation. **(06 Marks)**

Module-4

7 a. Give an account of vertical distribution of groundwater. **(06 Marks)**
   b. Write short note on Flood Control measures. **(06 Marks)**
   c. Give the detailed account of types of Aquifers. **(08 Marks)**

OR

8 a. Give an account of the procedure for Seismic Refraction Survey method for Groundwater Exploration. **(10 Marks)**

b. Give a detailed account of methods of Artificial Groundwater recharge. **(10 Marks)**

Module-5

9 a. Write the causes and effects of Earthquakes. **(08 Marks)**

b. Write the short note on Seismic Zones of India. **(06 Marks)**

c. Write a Short note on Tsunami. **(06 Marks)**

OR

10 a. Explain the application and limitations of Remote Sensing Techniques. **(08 Marks)**

b. Explain the components of GIS. **(06 Marks)**

c. Enumerate the applications of Global Positioning System. **(06 Marks)**

* * * * *

82. Who presides over the Lok – Sabha if neither the Speaker nor the Deputy Speaker is not available?
a) A member nominated by the President.
b) A member chosen by the Council of Minister.
c) A member of the panel of Chairman announced by the Speaker.
d) The Senior most member of the Lok – Sabha.

83. Lok – Sabha is superior to the Rajya – Sabha because
a) It is directly elected
b) It alone controls the Finances
c) It can oust the Council of Minister through a Vote of no – Confidence
d) of all the above reasons.

84. The Supreme Court of India was setup
a) By the Constitution
b) Under the Indian Independence Act 1947
c) Through an Act of Parliament in 1950
d) Under the Government of India Act 1935

85. The Judges of the Supreme Court are
a) Elected by the Parliament.
b) Appointed by the President on the advice of the Parliament.
c) Appointed by the President on the advice of the P.M.
d) Appointed by the President on the advice of the Chief Justice of India.

86. The Judges of the Supreme Court after retirement are not permitted to carry on practice before
a) The Supreme Court
b) The High Courts
c) The District and Session Courts
d) Any of the above

87. Which of the following Jurisdiction of the Supreme Court of India has been wrongly listed
a) Original Jurisdiction
b) Appellate Jurisdiction
c) Advisory Jurisdiction
d) None of the above

88. Generally, the Governor belongs to
a) The State where he is posted
b) Some other State
c) The Indian Administrative Service
d) None of the above

89. Which of the following Legislative Powers is enjoyed by the Governor of a State?
a) He can summon or prorogue the State Legislature
b) He can appoint one sixth of the members of the Legislative Council.
c) He can nominate certain member of the Anglo Indian Community to the Legislative Assembly.
d) All of above powers.

90. Engineering Ethics is a
a) Preventive Ethics
b) Developing
c) Natural Ethics
d) Scientifically developed Ethics.

91. Professional Ethics is
a) Set of Rules relating to personal character of Professionals
b) Traditional Rules observed since a long time.
c) Set of Rules passed by Professional bodies.
d) Set of standards adopted by Professionals.

92. Tight couple means
a) Binding two beams tightly
b) Erecting two pillars side by side
c) Process tightly coupled
d) Strong adhesive material

93. An Engineer may not be held legally liable or causing harm. When the harm is caused
a) Intentionally
b) Ignorantly
c) Negligently
d) Recklessly

94. A compound measure of the probability and magnitude of the adverse effect is known as.
a) Risk
b) Benefit
c) Compensation
d) Both (b) and (c)

95. Engineers shall issue public statements only
a) In subjective manner
b) In objective manner
c) On their personal responsibility
d) Based on the reports sent by higher Officers.

96. Attackers commonly target _____ for fetching IP address of a target or victim user.
a) Website
b) Web pages
c) IP tracker
d) Emails

97. _____ is the first phase of Ethical hacking
a) DNS Poisoning
b) Foot printing
c) ARP – Poisoning
d) Enumeration

98. Which of the following do not comes under the intangible skills of hackers?
a) Creative thinking
b) Problem solving capability
c) Persistence
d) Smart attacking potential

99. Why programming language is important for ethical hackers and security professionals?
a) Only to write malware.
b) For solving problems and building tool and programs
c) To teach programming
d) To develop program to harm others.

100. Understanding of _____ is also important for gaining access to a system through networks.
a) OS
b) Email servers
c) Networking
d) Hardware

* * * * *

62. Which authority can a Citizen approach for securing right of Personal freedom
a) The Parliament
b) The President
c) Supreme Court alone
d) Both Supreme Court and High Court

63. The main objective of the Fundamental Rights is to
a) Ensure Independence of Judiciary
b) Promote a Socialist Pattern of Society
c) Ensure Individual liberty
d) Ensure all the above

64. Under which section of IT Act, stealing any digital asset or information is written a cyber crime
a) 65
b) 65 - D
c) 67
d) 70

65. Fundamental duties of the Indian Citizen, were
a) Enshrined in the original Constitution
b) Added to the Constitution by the 42nd Amendment.
c) Added to the Constitution by the 44th Amendment.
d) Added to the Constitution in the wake the Supreme Court Judgment Keshavananda Bharati case with consent of all the Political parties.

66. Which one of the following Fundamental Right has been subject of maximum litigation since the inauguration of the Constitution?
a) Right to Freedom of speech
b) Right to Constitutional remedies
c) Right to property
d) Right against exploitation

67. The Fundamental Rights of Citizens were
a) Incorporated in the original Constitution
b) Outlined in an Act of Parliament in 1952
c) Incorporated by the 42nd Amendment
d) Incorporated by the 44th Amendment

68. The Fundamental Rights of Indian Citizen have been criticized on the ground that
a) They are hemmed in by too many restrictions.
b) They are couched in language beyond the comprehension of ordinary citizen
c) They are absolute
d) Both (a) and (b).

69. Respite means
a) Death due to drowning
b) Awarding lesser punishment
c) Death due to strangulation
d) Painless death

70. The Governor recommends the imposition of President rule in the State
a) On the recommendation of the State Legislature
b) On the recommendation of the C.M.
c) On the recommendation of Council of Minister
d) If he is satisfied that the State Government cannot be carried on his accordance with the provision of the Constitution.

71. Which one of the following does not take part in the Election of the President?
a) Elected members of Lok Sabha
b) Elected members of Rajya Sabha
c) Members of the Legislative Council
d) None of these

72. The President can be removed by impeachment procedure on the ground of violating the Constitution by
a) The Supreme Court
b) The Lok – Sabha only
c) Both Houses of Parliament
d) The High Court

73. The Vice – President of India is elected by the
a) People
b) Members of State – Legislative Assembly
c) Members of the Rajya – Sabha
d) Members of both the Houses of Parliament at Joint sitting.

74. Who discharges the duties of the President in the event of President and Vice – President being not available?
a) The Prime Minister
b) The Chief Justice of India
c) The Speaker of Lok - Sabha
d) The Attorney General of India

75. Which one of the following can the President of India declare?
a) Emergency due to threat of War, external aggression or armed rebellion
b) Emergency due to breakdown of constitutional machinery in the State
c) Financial emergency on account of threat to the financial credit of India
d) All the above.

76. Which budget is placed first in the Parliament House
a) Railway
b) General budget
c) Financial
d) Vote of credit

77. The President can make Laws through ordinances
a) During the recess of the Parliament
b) On certain subjects even when Parliament is in session
c) Only on subjects contained in the concurrent list
d) Under no circumstances.

78. The President can grant pardon in
a) All cases of punishment by Court martial
b) All offences against laws in the Union and Concurrent list
c) All cases involving death sentence
d) All the above cases

79. If State fails to comply with the directives of the Central Government, the President can
a) Declare break - down of Constitutional machinery in the State and assume responsibility for its governance
b) Send reserve police force to secure compliance with directions
c) Dissolve the State legislature and order fresh elections
d) Can do either (a) or (b)

80. Which one of the following has been wrongly listed as Judicial power of the President of India?
a) He appoints the Chief Justice and other Judges of the Supreme Court
b) He can grant pardon, reprieve and respite to a person awarded punishment
c) He can consult the Supreme Court on any question of law or fact.
d) He can remove the Judges of Supreme – Court on ground of misconduct.

81. Who decides disputes regarding disqualification of Members of Parliament?
a) The President
b) The Concerned house
c) The Election Commission.
d) The President in consultation with the Election Commission.

36. One of the Aims of studying Engineering Ethics is to
 a) Inspire Engineers to acquire in depth knowledge in their field
 b) Acquire new skills in Engineering testing.
 c) Stimulate moral imaginations
 d) Make Engineers self – confident in discharging their duties.

37. Which one is not an impediment to responsibility?
 a) Minimalist   b) Microscopic vision
 c) Trademark   d) Egocentric tendencies

38. Being safe or blaming others is type of attitude of responsibility of Engineers
 a) Minimalist   b) Reasonable care   c) Good works   d) None of these

39. To overcome an impediment 'Uncritical Acceptance', what step an Engineer has to take?
 a) Accept and Analyse   b) Analyse and Accept
 c) Always say Yes Boss   d) None of these

40. Engineering Ethics.
 a) Stimulates the moral imagination
 b) Provides up – to – date knowledge in the field of Engineering.
 c) Stimulates to Conduct Research
 d) Stresses on Time Management.

41. For hacking a database or accessing and manipulating data which of the following language the hacker must know?
 a) SQL   b) HTML   c) TCL   d) F #

42. _____ are piece of programs or scripts that allow hackers to take control over any system.
 a) Exploits   b) Antivirus   c) Firewall bypassers   d) Worms

43. The process of finding vulnerabilities and exploiting them using exploitable scripts or programs are known as
 a) Infiltrating   b) Exploitation   c) Cracking   d) Hacking

44. How many types of exploits are there based on their nature from hackings perspective?
 a) 04   b) 03   c) 07   d) 05

45. A _____ is a set of changes done to any program or its associated data designed for updating fixing or improving it.
 a) Scratch   b) Patch   c) Fixer   d) Resolver

46. fixing of security vulnerabilities in a system by additional programs is known as _____ patches.
 a) Hacking   b) Database   c) Server   d) Security

47. _____ are some very frequent updates that come for every antivirus.
 a) Patch update   b) Data update
 c) Code update   d) Definition update

48. Cyber – Crime can be categorized into _____ types.
 a) 04   b) 03   c) 02   d) 06

49. Which of the following is not a type of peer to peer cyber – crime.
 a) Phishing   b) Injecting Trojans to a target victim
 c) MITM   d) Credit card details leak in deep web

50. In which year India's IT Act came into existence?
 a) 2000   b) 2001   c) 2002   d) 2003

51. The Constitution of India was enacted by a Constituent Assembly set up
 a) Under the Cabinet Mission Plan 1946
 b) Under the Indian Independence Act 1947
 c) Under a resolution of the Provisional Government.
 d) By the Indian National Congress.

52. The Members of the Constituent Assembly are
 a) Directly elected by the people   b) Nominated by various Political Parties
 c) Nominated by rulers of the Indian States   d) Elected by the Provincial Assemblies

53. The Federal feature of the Indian Constitution provides for
 a) Distribution of Legislative powers between the Union Government and the State Government.
 b) Division of powers between the Executive and Judiciary.
 c) Distribution of powers between the P.M and Cabinet.
 d) None of these

54. The Governor of State is
 a) Directly elected by the people   b) Elected by the State Legislature
 c) Appointed by the President   d) Nominated by the Parliament.

55. The source of Authority of the Indian Constitution is
 a) The Government of India   b) The People of India
 c) The President   d) The Parliament

56. The Preamble was Amended by
 a) 24th Amendment   b) 42nd Amendment
 c) 39th Amendment   d) None of the above

57. Fraternity means
 a) Spirit of brotherhood   b) Fatherly treatment
 c) Unity and integrity   d) Elimination of Economic Justice

58. In the final form of the Constitution adopted by the Constituent Assembly, how many Articles and Schedules were there?
 a) 397 Articles and 7 Schedules   b) 395 Articles and 4 Schedules
 c) 400 Articles and 10 Schedules   d) 395 Articles and 8 Schedules

59. The Preamble of the Indian Constitution does not contain concept of
 a) Democratic   b) Adult Franchise   c) Sovereignty   d) Fraternity

60. The strength of the Constituent Assembly, after the withdrawal of the Muslim League, was reduced to
 a) 299 members   b) 329 member   c) 331 members   d) 359 members

61. The Fundamental Rights of a Citizen can be suspended
 a) By the Parliament through a Law enacted by two – third majority
 b) By the President during a National emergency
 c) By the Supreme Court   d) None of these

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

16. Which one of the following was wrongly listed as a duty of Indian Citizens
a) To uphold and protect the Sovereign unity and integrity of the Country
b) To promote harmony and the spirit of common brotherhood among the people of India
c) To protect and pressure the natural Environment
d) To practice Family planning and control population.

17. The Directive Principles Aim at
a) Ensuring Individual liberty
b) Ensuring strengthening of the Country's Independence
c) Providing a social and economic base for a genuine democracy in the Country.
d) Achieving all the above objectives.

18. The Directive Principles are the
a) Positive instructions to the Government to work for the attainment of the set objectives
b) Negative injunctions to the Government to refrain from encroaching on the freedom of the people.
c) Directive to the State to enhance the International presige of the Country
d) Directives to the Government to pursue a policy of non alignment.

19. Which one of the following has been wrongly listed as Directive Principle based on 'Liberal Principles'?
a) Separation of Judiciary and Executive
b) Provision of a Uniform Civil code for the Country
c) Protection of monuments and places of artistic or Historical importance
d) None of the above has been wrongly listed.

20. The Constitution has vested the Executive power of the Union Government in
a) The President of India
b) The Prime Minister
c) The Council of Minister
d) All the above

21. Impeachment proceedings can be initiated against the President in either House of Parliament only if a resolution signed by members of the house is moved.
a) 10 percent of total
b) 25 percent of total
c) 20 percent of total
d) 15 percent of total

22. Which one of the following functions of Prime Minister has been wrongly listed?
a) He presides over the meeting of the Cabinet
b) He prepares the agenda for the meeting of the Cabinet.
c) He coordinates the working of various department
d) He chairs the meeting of the various standing and ad-hoc committees of Parliament.

23. A motion of no confidence against the Council Ministers can be moved in the Lok – Sabha , if it is supported by atleast
a) 50 members
b) 55 members
c) 100 members.
d) One – third of the total members of Lok - Sabha

24. The President can call a Joint session of the two Houses of Parliament
a) If a bill passed by one house is rejected by the other
b) If the amendment proposed to the bill by one house is not acceptable to the other house.
c) If the house does not take any action for six months on a bill remitted by the other house.
d) Under all the above conditions.

25. The Members of the Rajya – Sabha except the nominated ones are
a) Directly elected by the people
b) Elected by local Self – Governing bodies
c) Elected by the Legislative Assemblies of the States.
d) Elected partially by Legislative Assemblies and partially by the Local Self Governing bodies.

26. The President who is the head of the State under the Parliamentary system prevailing in India.
a) Enjoys absolute powers
b) Enjoys limited but real powers
c) Enjoys only nominal powers
d) Enjoys no powers

27. The Vice – President is the Ex – Office Chairman of
a) The Rajya Sabha
b) The National Development Council
c) The Planning Commission
d) None of the above

28. The Speaker of the Lok – Sabha is .
a) Appointed by the President.
b) Appointed by the President on the recommendations of the P.M.
c) Elected by the members of the two houses at a joint sitting.
d) Elected by the members of the Lok – Sabha.

29. The Rajya – Sabha is a permanent House but
a) One – third of its members retire every two years
b) One – half of its members retire every three years
c) One – fifth of its members retire every year
d) One – half of its member retire every two years.

30. The power to control the Expenditure of the Government of India rests exclusively with
a) The Parliament
b) The President
c) The Comptroller and Auditor General
d) The Union Finance Minister

31. Cooking Means
a) Boiling under pressure
b) Retaining results which fit theory
c) Making deceptive statements
d) Misleading the Public about quality of the product.

32. Which one is not a Trade Secret?
a) Theorem
b) Equipment
c) Formulae
d) Pattern

33. The codes of Ethics can be taken as guidelines by the Engineers to
a) Resolve the conflicts
b) Formulate problems
c) Overcome the work pressure
d) Escape from the responsibility

34. A Fault tree is used to
a) Assess the risk involved
b) Claim compensation
c) Take free consent
d) Improve safety

35. Risk of harm equal to probability of producing benefit is
a) Inevitable Risk
b) Acceptable Risk
c) Risk which cannot be avoided
d) None of these

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

Question Paper Version : D

Third/Fourth Semester B.E. Degree Examination, Feb./Mar. 2022

Constitution of India, Professional Ethics and Cyber Law

(COMMON TO ALL BRANCHES)

Time: 2 hrs.] [Max. Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the hundred questions, each question carries one mark.
2. Use only **Black ball point pen** for writing / darkening the circles.
3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**
4. Darkening two circles for the same question makes the answer invalid.
5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

1. Who of the following acted as the Constitutional Advisor of the Constituent Assembly
   a) Dr. B.R. Ambedkar   b) Dr. Babu Rajendra Prasad
   c) B.N. Rao   d) Dr. Sachidanand Sinha

2. Which one of the following provisions of the Constitution came into force soon after its adoption on 26ᵗʰ November 1949?
   a) Provision relating to Citizenship   b) Elections
   c) Provisional Parliament   d) All the above

3. The three types of Justice referred in our Preamble are
   a) Social, Economic and Social   b) Economic, International and Political
   c) Economic, Religious and Social   d) Religious, Social and Political

4. What was the exact Constitutional status of the Indian Republic on January 26, 1950, when the Constitution was inaugurated?
   a) A Democratic Republic   b) Sovereign Democratic Republic
   c) A Sovereign Secular Democratic Republic
   d) A Sovereign Socialist Secular Democratic Republic

5. Right to against Exploitation seeks to protect the weaker sections of Society by
   a) Giving equal pay for equal work for men and women.
   b) Prohibiting human trafficking and beggar
   c) Providing compulsory education for children below the age of 14 years
   d) Forcing a person to work against his will without payment

6. Which one of the following Directive principles can be described as Gandhian in nature?
   a) Providing equal pay for equal work for both Men and Women
   b) Workers participation in Management
   c) Organization of Village Panchayats as units of self Government
   d) Separation of Judiciary from the Executive.

7. Who has been vested with the power to decide whether the restrictions imposed on the Fundamental Rights of Indian Citizen are reasonable or not
   a) The Parliament   b) The President
   c) The Courts   d) None of the above

8. Which one of the following rights conferred by the Constitution is also available to Noncitizens.
   a) Freedom of speech assembly and association
   b) Freedom to move, reside and settle in any part of the territory of India
   c) Freedom to acquire property or to carry on any occupation, trade or business
   d) Right to Constitutional remedies.

9. Which one of the following has been wrongly listed as a special feature of Fundamental Rights in India
   a) Fundamental Rights are more sacrosanct than rights granted by ordinary laws
   b) Fundamental Rights are subject to reasonable restrictions
   c) Fundamental Rights are Justifiable and can be enforced through the Supreme Court
   d) None of these.

10. The main objective of the Cultural and Educational Rights granted to the Citizen is
    a) To preserve the rich culture heritage of India.
    b) To evolve a single integrated India culture.
    c) To help the minorities to conserve their culture.
    d) All the above.

11. The Chief Election Commissioner can be removed from his office before the expiry of term by the
    a) Chief Justice of India
    b) Prime Minister on the recommendation of Cabinet
    c) President on the recommendation of Parliament after the impeachment
    d) President on the advice of Chief Justice of India.

12. The quorum of minimum number of members required to hold the meetings of either Houses of Parliament is
    a) One - tenth   b) One - fifth   c) One - third   d) 72 hours

13. The Advice of the Supreme Court is
    a) Binding of the President
    b) Binding on the President if it is tendered unanimously
    c) Not binding on the President
    d) Binding in certain cases and not binding in other cases

14. The Governor reserves the right to issue ordinances
    a) When the State Legislature is not in session and he feels that there is an immediate need of action
    b) Whenever the State is under President's Rule
    c) Whenever he likes   d) None of these

15. The Writ of Certiorari is issued by a Superior Court
    a) To an Inferior Court to stop further proceedings in a particular case
    b) To an Inferior Court to transfer the record of proceedings in a case for its review
    c) To an Office to show his right to hold a particular Office
    d) To a Public authority to produce a person detained by if before the Court within 24 hours.

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

CBCS SCHEME

USN | | | | | | | | | | |

18CV32

Third Semester B.E. Degree Examination, July/August 2022
Strength of Materials

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain: (i) Stress   (ii) Strain   (iii) Modulus of Elasticity **(06 Marks)**
   b. Define four elastic constraints. **(08 Marks)**
   c. Determine the stresses in various segments of circular bar shown in the Fig.Q1(c). Also compute the total elongation taking Young's modulus E = 195 GPa.
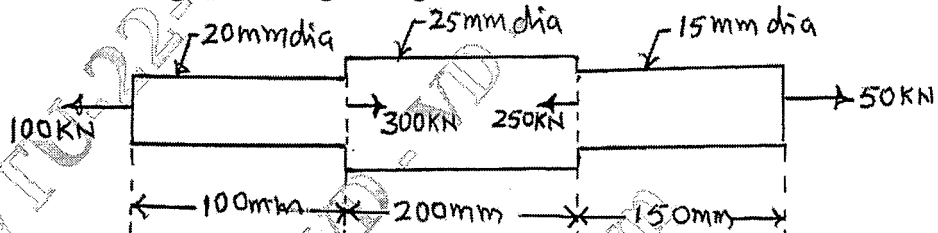
Fig.Q1(c)

(06 Marks)

OR

2 a. Derive an expression for the deformation of a rectangular tapering bar of uniform thickness subjected to an axial force. **(10 Marks)**
   b. A steel tube of 80 mm outer diameter and 10 mm thick is filled into a copper tube of 30 mm inner diameter and 10 mm thick. They are connected rigidly at the ends and subjected to an axial compression of 300 kN load. If length of bar is 600 mm, find the stresses in each material. Take E_s = 200 GPa and E_{cu} = 120 GPa. **(05 Marks)**
   c. A steel rod of 3 cm diameter and 5 m long is connected to two grips and the rod is maintained at temperature of 95°C. Determine the stresses and pull exerted when temperature falls below 30°C if:
   (i) The ends are not yielding
   (ii) The ends yields by 0.12 cm
   Take $E = 2 \times 10^5$ MN/m^2 and $\alpha = 12 \times 10^{-6}$/°C. **(05 Marks)**

Module-2

3 a. Explain maximum shear stress theory of failure. **(08 Marks)**
   b. A cast iron pipe 200 mm internal diameter and 50 mm metal thickness carries water under a pressure of 5 N/mm^2. Calculate the maximum and minimum intensities of circumferential stresses and sketch the distribution of circumferential stress intensity and intensity of radial pressure across the cross section. **(12 Marks)**

OR

4 a. Differentiate between thick and thin cylinders. **(02 Marks)**
   b. For thin cylinder, derive the equations for circumferential stress and longitudinal stress. **(08 Marks)**

c. At a certain point in a strained material the stress conditions shown in Fig.Q4(c). Determine:
   (i)   The normal and shear stresses on the inclined plane AB.
   (ii) Principal stresses and principal planes.
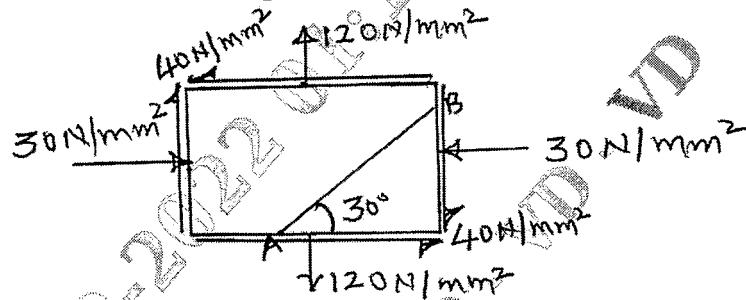   (iii) Maximum shear stresses and their planes.

Fig.Q4(c) **(10 Marks)**

Module-3

5 a. Explain different types of beams and supports. **(06 Marks)**

b. Define: (i) Shear force   (ii) Bending moment   (iii) Point of contra-flexure **(06 Marks)**

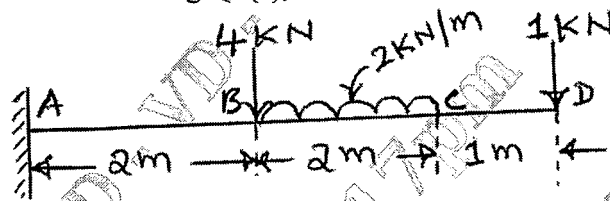c. For the cantilever beam shown in Fig.Q5(c), draw shear force and bending moment diagram.

Fig.Q5(c) **(08 Marks)**

OR

6 a. Derive the relationship between shear force, bending moment and load intensity. **(08 Marks)**

b. Draw the shearforce and bending moment diagram indicating principal values for an overhanging beam shown in Fig.Q6(b). Locate point of contraflexure if any.
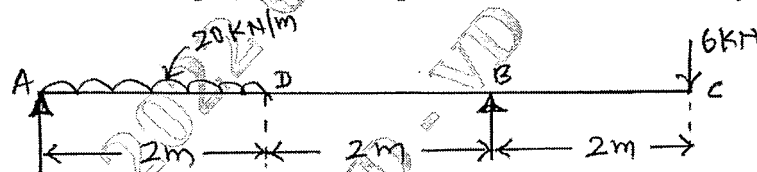

Fig.Q6(b) **(12 Marks)**

Module-4

7 a. Derive bending equation $\dfrac{M}{I} = \dfrac{f}{y} = \dfrac{E}{R}$ with usual notations. **(10 Marks)**

b. A hollow shaft has to transmit 600 KW power at 80 rpm. Torque developed may exceed the mean torque by 40%. Design the suitable section if the working stress is 90 MPa. Take diameter ratio 0.8. What will be the angular twist measured over a length of 2 m? Take C = 84 GPa. **(10 Marks)**

OR

8 a. Derive torsion equation $\dfrac{T}{J} = \dfrac{C\theta}{\ell} = \dfrac{q}{R}$ for a circular shaft subjected to pure torsion. **(10 Marks)**

b. Explain pure bending. **(04 Marks)**

c. Draw shear stress distribution for an I-shaped section of beam shown in Fig.Q8(c). Shear force on the section is 200 kN.
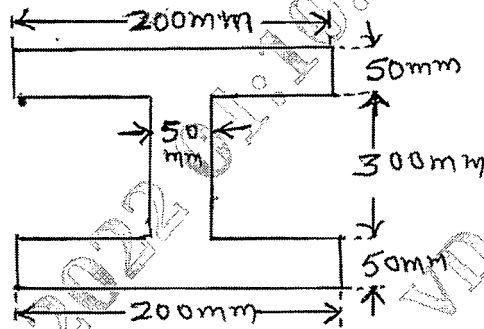

Fig.Q8(c)   **(06 Marks)**

Module-5

9 a. Derive the deflection equation for a beam in the standard form $EI\dfrac{d^2y}{dx^2} = -M$.   **(08 Marks)**

  b. Define: (i) Slope   (ii) Deflection   (iii) Elastic curve   **(06 Marks)**

  c. Find the Euler's crippling load for a hollow cylindrical steel column 40 mm external diameter and 4 mm thick. Consider the length of column 2.3 m and hinged at its both the ends. Also determine the crippling load by Rankines formula using constants 335 N/mm² and $a = \dfrac{1}{75000}$. Take E = 200 kN/m². **(06 Marks)**

OR

10 a. Derive an expression for Euler's crippling load for both ends hinged column with usual notations. **(08 Marks)**

  b. Explain the failure of short column and long column. **(04 Marks)**

  c. Derive an expression for the slope and deflection for a simply supported beam carrying UDL over entire span. **(08 Marks)**

* * * * *

CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

Third Semester B.E. Degree Examination, July/August 2022
Fluid Mechanics

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. What is Capillarity? Derive an expression for capillary rise of water in a glass tube. **(06 Marks)**
   b. A cube of 0.3m sides and weight 50N slides down an inclined plane sloped at 30° to the horizontal. The plane is covered by an oil of μ = 2.3 Pa-s with 0.03mm thickness. Compute the velocity with which the cube slides down. **(06 Marks)**
   c. An inverted U – tube differential manometer is connected to two points of pipes A & B through which water is flowing. The vertical distance between the centres of these pipes is 30cm with B below A. Oil (S = 0.8) is used in manometer. The level of manometer liquid in the two limbs is 35cm above the centres of respective pipes. Determine the difference of pressure between the pipes. **(08 Marks)**

OR

2 a. Distinguish between : i) Ideal fluids and Real fluids
      ii) Manometers and Pressure gauges   iii) Surface tension and Capillarity. **(06 Marks)**
   b. State and prove Pascal's law. **(06 Marks)**
   c. An oil of viscosity 5 Poise is used for lubrication between a shaft and sleeve. The diameter of shaft is 50cm and it rotates at 200 rpm. Thickness of lubrication is 1mm. Calculate the power lost in overcoming the friction for a sleeve length of 100mm. **(08 Marks)**

Module-2

3 a. Define Velocity potential function and Stream function. Hence obtain Cauchy – Riemann equation. **(08 Marks)**
   b. Calculate the force F required to hold the hinged door shown in Fig. Q3(b) in closed position. The door is 0.6m square. Air pressure above water surface is 30 kPa. **(12 Marks)**

Fig. Q3(b)

OR
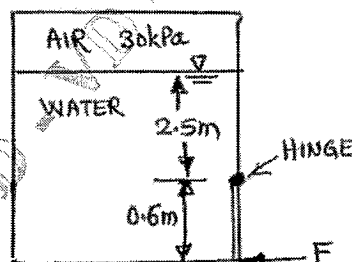
4 a. Derive an expression for total pressure and position of center of pressure on a vertically immersed plane surface. Show that center of pressure lies below CG. **(10 Marks)**
   b. For the two – dimensional flow defined by u = x – 4y and v = – y – 4x. Obtain stream function and velocity potential function. **(10 Marks)**

Module-3

5 a. Define Impulse Momentum equation and give its applications. **(04 Marks)**
  b. Derive an expression for discharge through a horizontal venturimeter. **(08 Marks)**
  c. A pipeline carrying oil of specific gravity 0.8 changes in diameter from 300mm at A to 500mm at B which is 5m above A. The rate of flow is 200 ℓps and pressure at A and B is respectively 20N/cm² and 15N/cm². Determine the head loss and direction of flow. **(08 Marks)**

OR

6 a. Derive an Euler's equation of motion along a stream line and obtain Bernoulli's equation. List assumptions. **(10 Marks)**
  b. A horizontal pipe of 300mm diameter is bent by 135°. If 250 ℓps of water is flowing through the pipe with a pressure of 400kPa, compute the magnitude and direction of force exerted on the bend. **(10 Marks)**

Module-4

7 a. Derive an expression for discharge through a small orifice. **(08 Marks)**
  b. Differentiate between : i) Orifice and mouthpiece   ii) Notch and Weir. **(04 Marks)**
  c. Water is flowing in a rectangular channel 1m wide and 0.75m deep water. Find the discharge over a rectangular weir of 0.6m crest length with 200mm head over crest. Take $C_d = 0.65$. Consider velocity of approach and neglect end contraction. **(08 Marks)**

OR

8 a. Explain types of nappe, with neat sketches. **(06 Marks)**
  b. What is Cipoletti notch? What is its advantages? Explain with expression. **(08 Marks)**
  c. Compute the hydraulic coefficients of an orifice of 25mm diameter discharging under a constant head of 1.5m. The coordinates of jet from vena – contracta are (2.288m, 0.915m). The discharge measured is 102 ℓpm. **(06 Marks)**

Module-5

9 a. Derive Darcy – Weisbach equation for friction loss through a pipe. **(08 Marks)**
  b. Explain pipes in series and pipes in parallel. **(06 Marks)**
  c. A hydraulic pipeline 3km long and 500mm diameter is used to convey water at 1.5m/s velocity. Determine the magnitude of instantaneous pressure induced if the outflow valve is closed in   i) 20 sec   ii) 3.5 sec. Consider the pipe as rigid and take $K_{water} = 2GPa$. **(06 Marks)**

OR

10 a. Derive an expression for an instantaneous pressure induced in a pipe due to sudden closure of valve when pipe is rigid. **(06 Marks)**
  b. Explain Hardy Cross method. **(06 Marks)**
  c. A compound pipe in series consists of 1800m long of 0.5m diameter, 1200m long of 0.4m diameter and 600m long of 0.3m diameter connected between two tanks with difference in water levels of 100m. Determine the flow rate in the pipe neglecting minor losses. Also compute the diameter of equivalent pipe to be connected between the two tanks.

  Take f = 0.04 in $h_f = \dfrac{fLV^2}{ZgD}$. **(08 Marks)**

* * * * *

CBCS SCHEME

USN | | | | | | | | | |

18CV34

Third Semester B.E. Degree Examination, July/August 2022
Building Materials and Construction

Time: 3 hrs. Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Mention the importance of Stones, Bricks and Timber as construction materials. **(05 Marks)**
   b. Write a brief note on stabilized mud block. **(05 Marks)**
   c. List the different tests constructed on bricks. Explain any two of them. **(10 Marks)**

OR

2 a. Lists the tests conducted on fine aggregates and explain any one of them in detail. **(08 Marks)**
   b. What are the requirements of good building stones? **(06 Marks)**
   c. Explain the requirements of good bricks. **(06 Marks)**

Module-2

3 a. Briefly explain various methods of sub soil exploration. What are the factors on which the choice of a particular method depends? **(10 Marks)**
   b. Define Foundation. Explain different types of foundation with suitable sketches. **(10 Marks)**

OR

4 a. Write a note on classification of stone masonry. **(06 Marks)**
   b. Write a note on partitions walls. **(04 Marks)**
   c. Find dimension of a combined rectangular footing for two column A and B carrying a load of 500kN and 750kN column A 300 × 300mm, column B 400 × 400mm in size centre to centre of column is 3.4 mts SBC soil 150kN/m² Width of footing is limited to 1.8m. **(10 Marks)**

Module-3

5 a. Explain : i) Chejja   ii) Canopy   iii) Balcony   iv) Lintel. **(08 Marks)**
   b. Explain various modes failures of an arch. **(08 Marks)**
   c. Highlight the important qualities of good flooring materials. **(04 Marks)**

OR

6 a. What are the factors to be considered while selecting a roof covering? **(05 Marks)**
   b. Explain different types of lintels. **(05 Marks)**
   c. What are the requirements of good roof? Draw a neat sketch of king post truss and show important elements. **(10 Marks)**

Module-4

7 a. Explain briefly the guidelines to be followed while locating doors and windows. **(10 Marks)**
b. What are the requirements of good stair? **(05 Marks)**
c. Discuss importance of formwork in constructional activity. **(05 Marks)**

OR

8 a. Plan a dog legged stair for a building in which the vertical distance between the floors is 3.6m. The stair hall measure 2.5m × 5m. **(10 Marks)**
b. Write short notes on the following :
i) Ranking shore
ii) Underpinning by pit method. **(10 Marks)**

Module-5

9 a. What are the objectives of plastering? Discuss the defects in plastering. **(10 Marks)**
b. Explain the method of applying :
i) Stucco plastering
ii) Lathe plastering. **(10 Marks)**

OR

10 a. What are the defects in painting? **(08 Marks)**
b. Explain different types of plaster finishes. **(06 Marks)**
c. What are the characteristics of ideal paint? **(06 Marks)**

* * * * *

KLS Vishwanathrao Deshpande Institute of Technology Haliyal

USN | | | | | | | | | |

18CV35

Third Semester B.E. Degree Examination, July/August 2022
Basic Surveying

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a.   Enumerate the applications of surveying in civil engineering.   **(06 Marks)**
  b.   Discuss the classification of surveying.   **(08 Marks)**
  c.   The distance between two points A and B measured along slope is 504 m. Find the horizontal distance between A and B when,
  (i) The angle of slope is 12°
  (ii) The slope is 1 in 4.5
  (iii) The difference in Elevation of A and B is 65 m   **(06 Marks)**

OR

2   a.   What is field book? List the points to be kept in mind while entering in field book. **(08 Marks)**
  b.   A rectangular plot measures 20cm×30cm on a village map drawn to a scale of 1 cm = 100 m. Calculate area in hectares. If it is redrawn on topo sheet to scale of 1 km = 1 cm. What will be its area? Determine representative fraction in both the cases.   **(06 Marks)**
  c.   A survey line BAC crosses a river, A and C being on the near and distant banks respectively. A 50 m perpendicular line to AB is measured from "A". Bearing of "C" and "B" are 320° and 230° respectively. AB being 25 m. Find the width of the river.   **(06 Marks)**

Module-2

3   a.   Differentiate between
  (i)   True meridian and magnetic meridian.   (ii) WCB and QB
  (iii)   Fore bearing and back bearing.   **(06 Marks)**
  b.   Compute the bearings for setting out regular pentagon, if the bearing of line AB is 30° 0′.   **(06 Marks)**
  c.   The following bearing were observed in running a closed traverse. Determine the correct magnetic bearings of the lines.   **(08 Marks)**

Line	FB	BB
AB	38° 30′	219° 15′
BC	100° 45′	278° 30′
CD	25° 45′	207° 30′
DE	325° 15′	145° 15′
EA	190° 30′	10° 15′

OR

4   a.   Explain the following :
  (i) Latitude and Departure   (ii) Dependent and Independent co-ordinates   **(06 Marks)**
  b.   What is closing error? Explain Bowditch's method of adjusting the traverse.   **(06 Marks)**
  c.   Adjust the following traverse using transit rule: **(08 Marks)**

Line	AB	BC	CD	DE	EA
Latitude	62.96	67.60	−143.67	−104.97	118.57
Departure	63.33	209.10	47.05	−119.55	−199.70

Module-3

5 a. Write a short note on Auto level.   (05 Marks)
   b. Define the following terms:
      (i)   Reduced level.   (ii) Turning point   (iii) MSL
      (iv)   Back sight   (v)   H.I.   (05 Marks)
   c. The following staff readings were observed successively with a level, the instrument having been moved after third, sixth and eighth readings. Enter readings and calculate RL of points by H.I method, if first reading was taken with a staff held on BM = 432.384 m.
      2.228 m, 1.606, 0.988, 2.090, 2.864, 1.262, 0.602, 1.982, 1.044, 2.684 m   (10 Marks)

OR

6 a. Explain differential leveling with a neat sketch.   (06 Marks)
   b. Write a note on curvature and refraction correction.   (06 Marks)
   c. Following details were recorded in level work. Calculate (i) True R.L of point "B"
      (ii) Angular error in collimination   (iii) Combined correction for curvature and refraction.
      If distance between A and B is 1000 m.   (08 Marks)

Instrument at	Staff reading on		Remarks
	A	B	
A	1.625	2.545	R.L.A = 100.80 m
B	0.725	1.405	

Module-4

7 a. What are the advantages and disadvantages of plane table surveying?   (06 Marks)
   b. Describe briefly radiation method and intersection method of plane tabling.   (10 Marks)
   c. Write short notes on orientation of plane table.   (04 Marks)

OR

8 a. Explain the graphical method of solution of two point problem with sketches.   (08 Marks)
   b. Describe the different forms of errors in plane table.   (06 Marks)
   c. Briefly explain the working operation of plane table surveying.   (06 Marks)

Module-5

9 a. Define contour. List any six characteristics of a contour with sketches.   (08 Marks)
   b. Discuss the different methods of determining area.   (04 Marks)
   c. A series of offsets were taken from a chain line to a curved boundary line at 10 m intervals in the following order: 3.25, 5.60, 4.20, 6.65, 8.75, 6.20, 3.25, 4.20, 5.65
      Calculate the area by,
      (i)   Average ordinate rule.   (ii) Trapezoidal rule
      (iii) Simpson's rule   (08 Marks)

OR

10 a. A road embankment is 30 m wide at the top with side slopes of 2 : 1. The ground levels at 100 m intervals along a line AB are as under:
      A170.30, 169.10, 168.50, 168.10, 166.50B.
      The formation level at "A" is 178.70 m, with uniform falling gradient of 1 in 50 from A to B. Determine the volume of earth work by prismoidal rule. Assume the ground to be in cross section.   (08 Marks)
   b. Explain Interpolation of contours. List the methods of contouring.   (06 Marks)
   c. Write short notes on Digital planimeter.   (06 Marks)

* * * * *

KLS Vishwanathrao Deshpande Institute of Technology, Haliyal

CBCS SCHEME

USN | | | | | | | | | |

Third Semester B.E. Degree Examination, July/August 2022
Engineering Geology

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1. a. Explain briefly the Internal structure of the Earth. **(08 Marks)**
   b. Explain the role of Geology in the field of Civil Engineering. **(08 Marks)**
   c. Name the different branches of Geology which are related to Civil Engineering. **(04 Marks)**

OR

2. a. Define a Mineral. Briefly explain the physical properties of a Mineral. **(12 Marks)**
   b. Describe any two of the following Minerals :
      i) Quartz   ii) Hematite   iii) Pyrite   iv) Mica. **(08 Marks)**

Module-2

3. a. Explain the different forms of Igneous Rocks with neat sketches. **(12 Marks)**
   b. Enumerate the classification of Igneous Rocks. **(08 Marks)**

OR

4. a. What is Sedimentation? Explain the Primary Sedimentary structures, with neat sketches. **(10 Marks)**
   b. What is Metamorphism? Explain the different kinds of Metamorphism with example. **(10 Marks)**

Module-3

5. a. Define the terms Dip , Strike and Outcrop. **(06 Marks)**
   b. Explain with a neat sketch, Mural Joints and Calumnar Joints. **(06 Marks)**
   c. What are Folds? Explain briefly the different types of folds with neat sketches. **(08 Marks)**

OR

6. a. What are Faults? Name different types of faults. What are the Engineering considerations of faults in the Civil Engineering Projects? **(10 Marks)**
   b. What are the factors considered for the selection of site for dams and reservoirs? **(10 Marks)**

Module-4

7. a. Explain the vertical distribution of ground water with a neat sketch. **(10 Marks)**
   b. Define Aquifer. Explain briefly the different types of Aquifer, with a neat sketch. **(10 Marks)**

OR

8. a. Explain the ground water exploration by Electrical Resistivity method. **(10 Marks)**
   b. Define the terms :
      i) Porosity   ii) Permeability   iii) Transmissibility. **(06 Marks)**
   c. Write short note on Flood control. **(04 Marks)**

Module-5

9 a. What are Earthquake? Add a note on causes and effects of Earthquake.   (10 Marks)
   b. Write short notes on :
      i)   Tsunami – causes and effects.
      ii) Landslides – Causes and remedial measures.   (10 Marks)

OR

10 a. What is Remote Sensing? What are its application in Civil Engineering?   (08 Marks)
   b. What is GIS? Name the different components of GIS.   (06 Marks)
   c. What are the applications of GPS in Civil Engineering?   (06 Marks)

* * * * *