Hall Ticket Number :										

R-15

Code: 5G634

II B.Tech. I Semester Supplementary Examinations March 2021

Building Materials and Construction

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Give the detailed classification of stones?
   b) Explain about precautions to be taken while blasting of stones?

OR

2. a) Write a note on dressing of stones?
   b) Explain about kiln burning of bricks?

UNIT–II

3. Explain about the different methods of manufacturing tiles

OR

4. a) Explain about the major constituents of lime?
   b) Explain about the major constituents of cement?

UNIT–III

5. a) What is meant by seasoning of timer? Explain about any one method?
   b) Draw a net cross section of stem of an exogenous tree and show various components of it?

OR

6. What are the different defects in timber? Explain neatly?

UNIT–IV

7. a) Explain about different types of masonry?
   b) Differentiate in between English & Flemish bonds?

OR

8. What is meant by a foundation? Explain different types of foundation with neat sketches?

UNIT–V

9. a) Explain about different types of floors?
   b) Explain about queen post truss with a neat sketch?

OR

10. a) Explain about the painting of a new wood?
    b) What are the different types of paints? Explain?

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Hall Ticket Number :										

R-15

Code: 5GC31

II B.Tech. I Semester Supplementary Examinations March 2021

Engineering Mathematics-III

(Common to CE & ME)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. Show that the Eigen values of diagonal matrix are just the diagonal elements of the matrix

OR

2. Using Cayley-Hamilton theorem, find A^8, if $A=\begin{bmatrix}1 & 2\\ 2 & -1\end{bmatrix}$

UNIT–II

3. Find the real root of the equation $x\log_{10} x = 1.2$ by Regula-falsi method correct to four decimal places.

OR

4. Find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at x=1.1 and 1.6 from the following table.

x	1.0	1.1	1.2	1.3	1.4	1.5	1.6
y	7.989	8.403	8.781	9.129	9.451	9.750	10.031

UNIT–III

5. Using Euler's Method, find an approximate value of y corresponding to $x=1$, given $\frac{dy}{dx}=x+y$ and $y=1$ when x=0.

OR

6. Apply Milne's method to find a solution of the equation $y'=x-y^2$ in the range $0\le x\le 1$ for the boundary conditions y=0 at x=0.

UNIT–IV

7. Find the half range cosine series for the function $f(x)=x$, when $0<x<®$ hence show that $\frac{1}{1^2}+\frac{1}{3^2}+\frac{1}{5^2}+\ldots=\frac{®^2}{8}$

OR

8. Form a partial differential equation by eliminating the arbitrary functions from $z=f(x+at)+g(x-at)$

UNIT–V

9. If $u=x^2+y^2$, find harmonic conjugate $v(x,y)$ and write the corresponding complex potential $f(z)=u+iv$

OR

10. Determine p such that the function $f(z)=\frac{1}{2}\log\left(x^2+y^2\right)+i\tan^{-1}\left(\frac{px}{y}\right)$ be an analytic function

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Hall Ticket Number :										

R-15

Code: 5G538

II B.Tech. I Semester Supplementary Examinations March 2021

Electrical Technology & Mechanical Technology

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

Use separate booklets for ***Part-A & Part-B***

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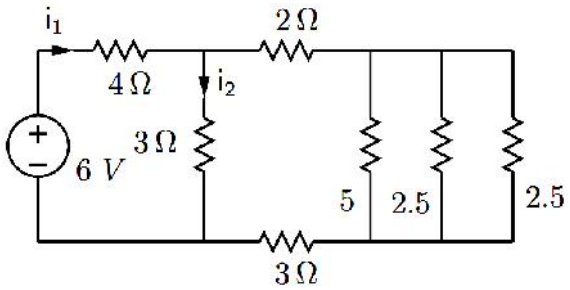
PART-A

UNIT–I

1. a) Calculate the currents i_1 and i_2 in the below circuit?



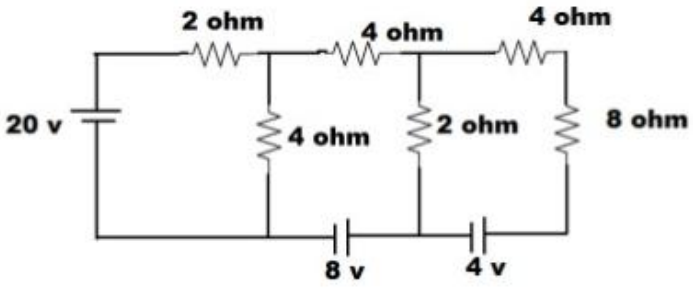
7M

b) Explain the principle of operation of DC motor with constructional futures? 7M

OR

2. a) Define Ohm's law and write the limitations of it? 7M

b) Find the current through 8 ohm resistance by using KVL & KCL?



7M

UNIT–II

3. a) Explain the construction of three phase induction motor; with neat diagram explain the torque-slip characteristics? 7M

b) Explain why induction motor is mostly preferable in industry than DC motor now a days? 7M

OR

4. a) Define and explain Hysteresis Loss, eddy current loss in an electrical machine? 7M

b) Explain what is alternator; write a short note on construction of alternator? 7M

PART-B

UNIT–III

5.	a)	Describe about the working of oxy-acetylene gas welding with suitable sketch?	10M
	b)	List out specific applications of gas welding?	4M

OR

6.	a)	What is meant by nomenclature of a welding electrode?	6M
	b)	Briefly explain about various welding defects	8M

UNIT–IV

7.	a)	State the major applications of IC engines?	7M
	b)	Distinguish between two stroke and four stroke cycles?	7M

OR

8.	a)	Explain in detail about a common rail diesel injection system?	8M
	b)	Give the basic classification of air compressors	6M

UNIT–V

9.	a)	Define unit of refrigeration?	4M
	b)	Explain the working principal of Electrolux refrigeration system?	10M

OR

10.	a)	Define psychromerty? And list important psychrometric properties?	8M
	b)	Discus about comfort chart?	6M

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Hall Ticket Number :										

R-15

Code: 5G633

II B.Tech. I Semester Supplementary Examinations March 2021

Fluid Mechanics

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Define vapour pressure, capillarity, surface tension and compressibility. 10M

   b) If the specific gravity of a liquid is 0.9. Determine its mass density and specific weight. 4M

OR

2. State Pascal's law. Derive the equation for the same. 14M

UNIT–II

3. Classify the types of flows. 14M

OR

4. The water is flowing through a pipe having diameters 0.3 m and 0.15 m at sections 1 and 2, respectively. The rate of flow through pipe is 0.04 m^3/s. The section 1 is 5 m above the datum and section 2 is 2 m above datum. If the pressure at section 1 is 30×10^4 N/m^2, find the intensity of pressure at section 2. 14M

UNIT–III

5. a) Explain the terms 'Total Energy line' and 'Hydraulic gradient line'. 7M

   b) Distinguish between notch and weir ,orifice and mouth piece 7M

OR

6. List the major and minor losses. Derive expressions for calculating loss of energy in a pipe flow during sudden expansion in the pipe and sudden contraction in the pipe. 14M

UNIT–IV

7. Derive the Hagen poiseuille equation for the loss of head in pipes. 14M

OR

8. An oil of viscosity 0.1 Ns/m^2 and relative density 0.9 is flowing through a circular pipe of diameter 50 mm and of length 300 m. The rate of flow of fluid through the pipe is 3.5lps. Find the pressure drop in a length of 200 m. 14M

UNIT–V

9. Define the term dimensional analysis and model analysis. Describe the Rayleigh's method for dimensional analysis with example. 14M

OR

10. Assuming that the viscous force F ,exerted by a fluid on a sphere of diameter D depends on the viscosity μ, mass density of the fluid "ρ", and the velocity of the sphere v, obtain the expression for the viscous force. 14M

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Hall Ticket Number :										

R-15

Code: 5G631

II B.Tech. I Semester Supplementary Examinations March 2021

Strength of Materials-I

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any *five full* questions by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. Define and explain the following terms
   a.) Proof stress
   b.) HOOKS law
   c.) Elasticity
   d.) Ductility

OR

2. a) Explain the stress strain relation for mild steel?
   b) Derive the expression for the analysis of uniformly tapered circular rod?

UNIT–II

3. a) Explain different types of beams, loads and supports?
   b) Define shear force and Bending moment?

OR

4. Calculate the maximum shear force and bending moment of a simply supported beam of span L subjected to Uniformly varying triangular load with an intensity of W KN/m acting at its centre?

UNIT–III

5. A rectangular beam 300mm deep is simply supported over a span of 4m.What UDL per meter, the beam may carry if the bending stress is not to exceed 120? Take $I=8X10^6mm^4$.

OR

6. Write the assumptions and Derive the equation for theory of simple bending?

UNIT–IV

7. A simply supported beam of span 5.0 m is carrying a point load of 30 kN at the centre in addition to self-weight of 5 kN/m. Determine the maximum slope and maximum deflection. Take EI = 1 x 107 kN-m.

OR

8. Determine the slope and deflection of a simply supported beam carries the triangularly distributed symmetrical load by double integration method.

UNIT–V

9. A cylindrical shaft 100mm diameter made of steel of yield strength 350MPa is subjected to static load of 100kN and bending moment of 10kN.m and a torsional moment of 30 kN.m. Determine the factor of the shaft using Maximum principal stress theory.

OR

10. A rectangular block of a material is subjected to a tensile stress of 100N/ mm2 on one plane and a tensile stress of 47N/ mm2 on a plane right angle to the earlier, together with a shear stress of 63N/ mm2 on all the planes. Determine
    a) the magnitude of principal stresses **b)** the orientation of principal planes and **c)** the maximum shear stress.

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Hall Ticket Number :										

R-15

Code: 5G632

II B.Tech. I Semester Supplementary Examinations March 2021

Surveying

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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Marks

UNIT–I

1. a) Explain the classification of survey 4M

   b) 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 and , iii) the difference in elevation of A and B is 65 m. 10M

OR

2. With neat sketches, explain different types of obstacles in chaining 14M

UNIT–II

3. a) The following consecutive readings were taken with the help of dumpy level 1.904, 2.653, 3.906, 4.026, 1.964, 1.702, 1.592, 1.261, 2.542, 2.006 and 3.145. The instrument was shifted after fourth and seventh readings. The first reading was taken on the staff held on BM of RL 100 m. Determine the R.L. of the various points by rise and fall method. 12M

   b) Mention the uses of counter map. 2M

OR

4. Describe briefly methods involved in calculating the areas. 14M

UNIT–III

5. a) Explain the permanent and temporary adjustments of Verniar theodolite. 7M

   b) Explain the measurement of a horizontal angle by repetition method. 7M

OR

6. The following observations are lengths and bearings of the lines of traverse ABCDE, the length and bearing of EA have been omitted. Calculate the length and bearing of the line EA. 14M

Line	AB	BC	CD	DE	EA
Length (m)	204	226	187	192	?
Bearing	87˚ 30’	20˚ 20’	280˚ 0’	210˚ 3’	?

UNIT–IV

7. a) Explain the method of setting out a curve by radial offsets from tangents. 12M

   b) List the various types of curves. 2M

OR

8. a) Explain the principles and characteristics of EDM 6M

   b) Discuss about microwave and electro optical system adopted in total station. 8M

UNIT–V

9. a) Explain the three point problem in Plane Tabling. 10M

   b) List the instruments used in Plane Table Surveying. 4M

OR

10. a) Explain the difference between tangential and stadia tachometry 7M

    b) How will you determine the stadia constants? Explain. 7M

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