S.Y. (Civil) Sem III

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27/11/17

Bharatiya Vidya Bhavan's

Sardar Patel College of Engineering

(A Government Aided Autonomous Institute)
Munshi Nagar, Andheri (West), Mumbai – 400058.

Final Exam (November 2017)

2017-18 (Odd Semester)

Q. P. Code: HS301
Duration: Three Hours
Program: U.G. (B. Tech. Civil)
Course Code : HS301

Master file.

Max. Marks: 100
Class: ***S.Y. (Civil), Sem: III (Value Added Audit course)***
Name of the Course: Economics for Engineers

Instructions:

- Solve **any FIVE questions.**
- Answer to all sub questions should be grouped together.
- **Figure** to right indicates full marks.
- Assume suitable data wherever necessary and state it **clearly.**
- Each question carries ***20 marks***

Question No.	Description	Max. Marks	Course Outcome Number	Module No.
Q.1 (a)	State both the laws of production. Explain in detail "Law of variable proportion"	10	CO-04 (a)	IV
(b)	Explain Isoquants and Isocost lines in detail	10	CO-04 (b)	IV
Q.2 (a)	What is the meaning of Engineering Economics? Describe principles of Engineering Economics in brief? Whats is the Nature & Scope of Engineering Economics?	10	CO-01 (a)	I
(b)	State the basic economic problems? Differentiate between Micro & Macro Ecomonics?	10	CO-01 (b)	I
Q.3 (a)	Explain cash flow diagram, Simple interest & Compound interest in details	10	CO-05 (a)	V
(b)	What are the different types of Costs? Also discuss in detail "Elements of Costs"	10	CO-05 (b)	V
Q.4 (a)	Suppose a seller of a textile cloth wants to lower the price of its clotg from Rs.150 per meter to Rs.142.5 per meter .If its present sales are 2000 meters per month. And further if it estimated that its elasticity of demand for the product equals 0.7. Show: a) Whether or not his total revenue will increase as a result of his decision to lower the price. b) Calculate the exact magnitude of its total revenue.	10	CO-03 (c)	III
(b)	If price of coffee rises from Rs. 45 per packet to Rs.55 per packet and as a result the consumer's demand for tea increases from 600 packets to 800 packets. Find out the CED for coffee.	10	CO-03 (d)	III

S.Y. (civil) Sem III

<table>
<tr><td>Q.5 (a)</td><td>What is Demand? Classify demand in detail. What is Law of Demand, explain in detail</td><td>10</td><td>CO- 02 (a)</td><td>I</td></tr>
<tr><td>(b)</td><td>Suppose a market consists of 3 consumers A, B,& C whose individual demand functions are given below:
a) $P = 50 - 0.25\ Q_A$
b) $P = 40 - 2.00\ Q_B$
c) $P = 35 - 0.50\ Q_C$
i) Find out the market demand function
ii) If market supply function is, $Q_S = 40+3.5\ P$, determine equilibrium price & quantity.</td><td>10</td><td>CO-02 (b)</td><td>III</td></tr>
<tr><td>6 (a)</td><td>What is “Cross Elasticity of demand”? Explain in details</td><td>8</td><td>CO-02 (b)</td><td>III</td></tr>
<tr><td>(b)</td><td>From the following particulars given below, prepare a cost sheet:
<table>
<tr><td>Direct material</td><td>1,50,000</td><td>Direct labour</td><td>50,000</td></tr>
<tr><td>Factory Overheads</td><td>60,000</td><td>Administrative</td><td>75,000</td></tr>
<tr><td>Distribution Overheads</td><td>20,000</td><td>Sales</td><td>4,65,000</td></tr>
<tr><td>Direct Expenses</td><td>20,000</td><td>Selling overheads</td><td>25,000</td></tr>
</table></td><td>12</td><td>CO-06 (a)</td><td>VI</td></tr>
<tr><td>7</td><td>From the following data, prepare a Cost Sheet as on 31.12.2009
<table>
<tr><td>Particulars</td><td>31.12.2008</td><td>31.12.2009</td></tr>
<tr><td>Raw material</td><td>60,000</td><td>50,000</td></tr>
<tr><td>Work ion progress</td><td>24,000</td><td>18,000</td></tr>
<tr><td>Finished goods</td><td>34,000</td><td>55,000</td></tr>
</table>
<table>
<tr><td>Particulars</td><td>Amount</td></tr>
<tr><td>Purchase of materials</td><td>4,23,000</td></tr>
<tr><td>Factory overheads</td><td>43,000</td></tr>
<tr><td>Distribution overheads</td><td>6,000</td></tr>
<tr><td>Chargeable expenses</td><td>45,000</td></tr>
<tr><td>Carriage Inward</td><td>8,000</td></tr>
<tr><td>Productive wages</td><td>80,000</td></tr>
<tr><td>Admin. Overheads</td><td>24,000</td></tr>
<tr><td>Sales</td><td>7,20,000</td></tr>
<tr><td>Selling Overhead</td><td>16,000</td></tr>
</table></td><td>20</td><td>CO-06 (b)</td><td>VI</td></tr>
</table>

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S.Y.B.Tech. Civil - Sem III

Bharatiya Vidya Bhavan's

Sardar Patel College of Engineering

(A Government Aided Autonomous Institute)

Munshi Nagar, Andheri (West), Mumbai – 400058.

End Semester Exam, November-2017

Q. P. Code:
Duration: 3 hour
Program: Civil
Course Code : **BTC- 202**

Max. Marks: 100
Class: S.Y.B.Tech. Semester: III
Name of the Course: Surveying-I

Master file.

Instructions:

1. Question No 1 is compulsory.
2. Attempt any four questions out of remaining six.
3. Draw neat diagrams
4. Assume suitable data if necessary

Question No		Maximum Marks	Course Outcome Number	Mod. No.
Q1	(a) Derive an expression for the radius of zero circle, when the wheel is outside the pivot and tracing point.	**06**	C.O.1	5
	(b) Explain two peg method in Theodolite survey.	**05**	C.O.3	6
	(c) Explain construction and working of optical square.	**05**	C.O.1	1
	(d) Discuss the term balancing of sight in Levelling.	**04**	C.O.3	3
Q2	(a) Derive an expression for the Sensitivity of bubble tube. Also discuss the factors affecting the same.	**10**	**C.O.1**	**3**
	(b) The following readings were observed from a planimeter: initial reading = 9.874, final reading = 3.467, the zero crossed the index thrice in the clockwise direction. The anchor point was kept inside the areas and the constant were M= 100.5 cm^2 and C=30. Find the area of the plan.	**06**	**C.O.1**	**5**
	(c) What are the primary divisions of surveying?	**04**	**C.O. 1**	**1**
Q3	(a) A closed traverse PQRSTP was run using prismatic compass to collect field details. Detect local attraction at all the stations and find the correct included angles. Also eliminate the local attraction by applying suitable corrections and find corrected bearings.	**10**	C.O.2	2

Line	PQ	QR	RS	ST	TP
F.B.	144^0	$202^0 00'$	$246^0 30'$	336^0	$55^0 30'$
B.B.	$323^0 30'$	$20^0 30'$	$66^0 30'$	157^0	$232^0 30'$

	(b) Explain with neat sketch characteristics of contours.	**10**	C.O.1	3

S.Y.B.Tech. Civil. Sem III

Q4	**(a)** The following is the page of a level field book. Fill in the missing readings. Also apply usual checks.	**12**	C.O.2	3
	(b) What are the fundamental lines of Theodolite? Explain the desired relationship between them.	**08**	C.O.1	6
Q5	**(a)** Explain Two point problems in plane table survey.	**10**	C.O.1	7
	(b) Discuss the procedure for measurement of deflection using Theodolite.	**05**	C.O.1	6
	(c) The offset taken from a survey line to a boundary are given below. Find the area by Trapezoidal rule and Simpson's rule.	**05**	C.O.3	5
Q6	**(a)** Discuss the various corrections required during linear measurements.	**05**	C.O.3	1
	(b) Explain the difficulties in chaining and ranging works?	**05**	C.O.3	1
	(c) During a Theodolite survey the following details were observed: Calculate the lengths of line DE and EA?	**10**	C.O.1	6
Q7	**Write short notes on any four**			
	(i) Difficulties in levelling	**5**	C.O.3	3
	(ii) Variation in magnetic declination	**5**	C.O.1	2
	(iii) Graphical method of contour interpolation	**5**	C.O.2	3
	(iv) Sources of error in Theodolite survey	**5**	C.O.1	6
	(v) Corrections to linear measurements	**5**	C.O.3	1
	(vi)Orientation of Plane Table	**5**	C.O.3	7

Sl. No.	B.S.	I.S.	F.S.	Rise	Fall	R.L.	Remark
1	2.150					250.000	B.M.1
2	1.645		?	0.500			
3		2.345			?		
4	?		1.965	?			
5	2.050		1.825		0.400		
6	?		?	?		251.500	B.M.2
7	1.690		1.570	0.120			
8	2.865		2.100		?		
9			?	?		251.250	B.M.3

Chainage (m)	**0**	**20**	**40**	**60**	**80**	**100**	**120**
Offset (m)	3.80	3.20	4.6	3.91	5.10	4.40	3.81
Chainage (m)	**140**	**160**	**180**	**200**			
Offset (m)	5.20	5.90	4.32	3.77			

Line	AB	BC	CD	DE	EA
Length	145 m	76 m	65 m	?	?
Bearing	135^0 12'	85^0 12'	288^0 37'	24^0 46'	234^0 18'

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S.Y.B.Tech. Sem III Civil

Bharatiya Vidya Bhavan's

SARDAR PATEL COLLEGE OF ENGINEERING

(An Autonomous Institution Affiliated to University of Mumbai)

Munshi Nagar Andheri (W) Mumbai 400058

End Semester Examination

November 2017

Max. Marks: 100 | **Duration: 3 Hrs**

Class: S.Y. B. Tech | **Semester: III**

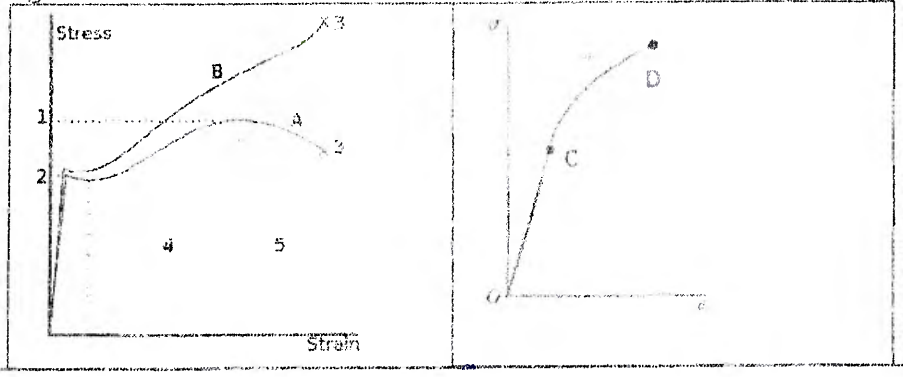
Course: Engineering Materials

Master file.

Course Code: BTC 204

Instructions:

- **Solve any five questions**
- **Draw neat sketches/diagrams wherever required**
- **Assume suitable data if necessary and state them clearly**
- **Figure on right indicate maximum marks for the given question, course outcomes attained and module no. of questions**

Q1	**Answer the following Questions**			
(a)	What are the characteristics of lime?	**(05)**	**CO1**	**M3**
(b)	Define/Explain the following terms Plasticity; Bulk Density; Hardness; Creep; Fatigue	**(05)**	**CO2**	**M1**
	OR			
(b)	There are two stress strain curves provided below. Classify them into either brittle or ductile material. Further name the numbers or alphabets in the figure 	**(05)**	**CO2**	**M1**
(c)	Explain ceramics and describe advantages of ceramics	**(05)**	**CO1**	**M4**
(d)	Classify rocks. Explain quarrying of stones in short	**(05)**	**CO2**	**M2**
Q2	**Answer the following Questions**			
(a)	What are the properties of good building mortar?	**(06)**	**CO1**	**M3**
(b)	Explain dressing/finishing of stone and enlist various types of dressing provided to stones with explanation of any four.	**(04)**	**CO2**	**M2**
(c)	Describe how the compounds of clinker affect the properties of cement.	**(05)**	**CO1**	**M3**
(d)	Describe in short the process of manufacture of clay tiles.	**(05)**	**CO2**	**M4**

S.Y.B Tech Sem III

Q3	**Answer the following Questions**			
(a)	State the conditions under which you will suggest to use quick setting cement and low heat Portland cement.	(05)	CO2	M3
(b)	Enumerate types of roof tiles and explain any two.	(05)	CO1	M4
(c)	Enlist and Explain the selection criteria for building materials.	(05)	CO1	M1
(d)	Enumerate various tests on bricks with standard limits for any 5 tests.	(05)	CO2	M2
Q4	**Answer the following Questions**			
(a)	Describe with flow diagrams the wet process of manufacturing of cement.	(08)	CO1	M3
(b)	What are the constituents of glass? State the functions of each of them.	(06)	CO2	M5
(c)	Discuss the properties and uses of copper and Aluminium.	(06)	CO2	M5
Q5	**Answer the following Questions**			
(a)	Explain different types of Geosynthetic materials used civil engineering construction works.	(08)	CO2	M7
(b)	What are the different forms of bitumen and discuss their uses?	(07)	CO2	M6
(c)	Write short note on AsCu Treatment.	(05)	CO1	M5
Q6	**Answer the following Questions**			
(a)	Explain the differences between cast iron, wrought iron and low carbon steel.	(07)	CO1	M5
(b)	Explain properties and uses of Gypsum.	(04)	CO2	M7
(c)	Discuss the various properties of concrete.	(05)	CO1	M3
(d)	Explain with neat sketch Batten Board.	(04)	CO1	M5
Q7	**Answer the following Questions**			
(a)	State the qualities you will consider in selecting timber for construction purposes?	(07)	CO1	M5
(b)	How lime is classified according to IS: 712 specifications?	(05)	CO1	M3
(c)	Write short note on Sound insulating materials.	(04)	CO2	M7
(d)	Describe in brief different types of adhesives.	(04)	CO1	M7

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END SEMESTER Examination

November 2017

Maximum Marks: **100** Duration: **3 hour**

Class: **S.Y.B.Tech** Semester: **III** Program:**Civil Engineering**

Name of the Course: **Engineering Mathematics III** Course Code : **BTC201**

Master file.

Instructions:

- Attempt any FOUR questions out of remaining SIX questions.
- Question number.**1** is **compulsory**.
- Answers to all sub questions should be **grouped** together.

Q		Marks	CO	Module No.
1(a)	If $A=\begin{pmatrix} 2 & 3 \\ -3 & -4 \end{pmatrix}$ prove that $A^{100}=\begin{pmatrix} -299 & -300 \\ 300 & 301 \end{pmatrix}$.	5	4	7
(b)	Find Laplace transforms of $f(t)=\sin^7 t$	5	1	1
(c)	Obtain the Fourier series for $f(x)=\begin{cases} 1+\frac{2x}{\pi} & -\pi<x<0 \\ 1-\frac{2x}{\pi} & 0<x<\pi \end{cases}$	5	2	4
(d)	Find the image and draw a rough sketch of the mapping of the region $1\le x\le 2$ and $2\le y\le 3$ under the mapping $w=e^z$	5	3	5
2 (a)	Find the eigen values and eigen vectors of the matrix. $A=\begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$	6	4	7
(b)	Prove that $\int_0^\infty \frac{\sin 2t+\sin 3t}{te^t}dt=\frac{3\pi}{4}$	6	1	2
(c)	If $f(x)=x \quad 0\le x\le 2$ Find half range cosine series using Parseval's identity deduce $\frac{\pi^4}{96}=\frac{1}{1^4}+\frac{1}{3^4}+\frac{1}{5^4}+\text{-------}$	8	2	5
3 (a)	Prove that the following function is analytic $f(z)=\cosh z$	6	3	5

(b)	Show that the matrix $A=\begin{bmatrix} 0 & c & -b \\ -c & 0 & a \\ b & -a & 0 \end{bmatrix}$ satisfies Cayley-Hamilton's theorem	6	4	7
(c)	Find L $\left[\frac{d}{dt}\left(\frac{1-\cos 2t}{t}\right)\right]$	8	1	1
4 (a)	Find the Fourier series for $f(x)=\begin{cases} 0 & -\pi \le x \le 0 \\ x & 0 \le x \le \pi \end{cases}$	6	2	4
(b)	Find the Laplace transforms of f(t), where $f(t)=\begin{cases} t^2, 0<t<1 \\ 0, t>1 \end{cases}$	6	1	1
(c)	If f (z) is a regular function of z, prove that $\left(\frac{\partial^2}{\partial x^2}+\frac{\partial^2}{\partial y^2}\right)\lvert f(z)\rvert^2 = 4\lvert f'(z)\rvert^2$.	8	3	5
5 (a)	Evaluate: $L^{-1}\left\{\log\left\lvert\frac{s^2+b^2}{s^2+a^2}\right\rvert\right\}$	6	1	2
(b)	Find non – singular matrices P, Q so that PAQ is a normal form where $A=\begin{bmatrix} 2 & 1 & -3 & -6 \\ 3 & -3 & 1 & 2 \\ 1 & 1 & 1 & 2 \end{bmatrix}$	6	4	6
(c)	Find the Fourier sine series for the function $f(x)=e^{ax}$ for $0<x<\pi$ where a is constant	8	2	4
6(a)	Evaluate: $L^{-1}\left\{\frac{s^2+2s+3}{(s^2+2s+2)(s^2+2s+5)}\right\}$	6	1	2
(b)	For what values of λ and μ the linear equations. $x+2y+z=8$ $2x+2y+2z=13$ $3x+4y+\lambda z=\mu$ have i)No solution ii) A unique solution iii)infinite number of solutions	6	4	6

(c)	Find the analytic function $f(z)=u+iv$ such that $u-v=e^{x}(\cos y-\sin y)$	**8**	**3**	**5**
7 (a)	Obtain complex form of the Fourier series of the function the $f(x)=\begin{cases}0 & -\pi\le x\le 0\\ 1 & 0\le x\le\pi\end{cases}$	**6**	**2**	**4**
(b)	Evaluate: $L^{-1}\left\{\log\left(1+\frac{1}{s^2}\right)\right\}$	**6**	**1**	**2**
(c)	Solve $y''-3y'+2y=4e^{2t}$ Given $y(0)=-3$ $y'(0)=5$	**8**	**1**	**2**

S.Y B.Tech. Civil. Sem III

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Sardar Patel College of Engineering

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END SEMESTER EXAMINATION

November 2017

Program: S.Y.B.Tech (Civil) | **Date: 20-11-2017**

Course code: BTC203 | **Duration: 3 hours**

Course Name: Strength of Materials | **Maximum Marks: 100**

Instructions: | **Semester: III**

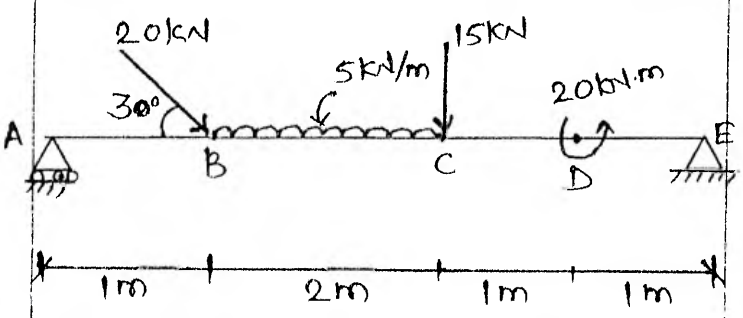
Attempt **any FIVE** questions **out of SEVEN** questions.

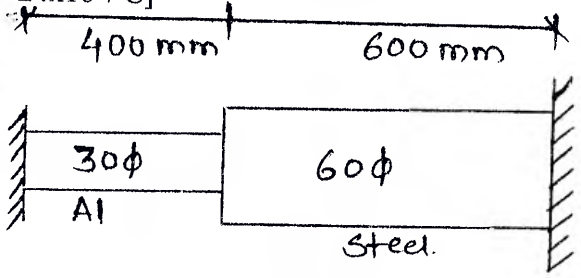
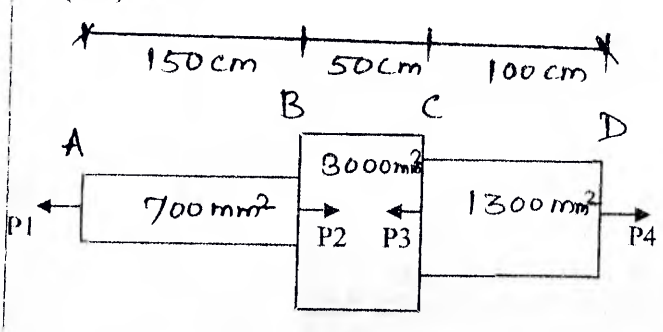
Attempt **any one** from **Q3 (a) and Q6(c)**.

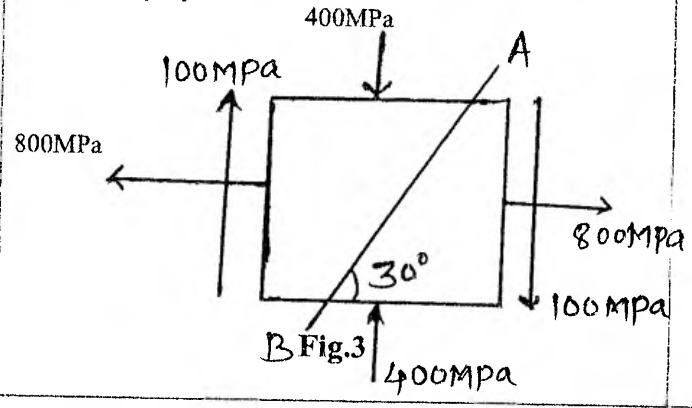
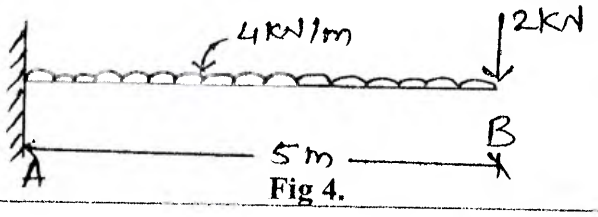
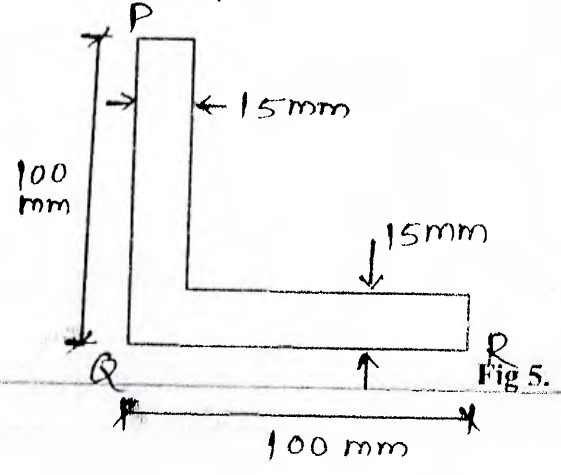
Figures to the right indicate full marks.

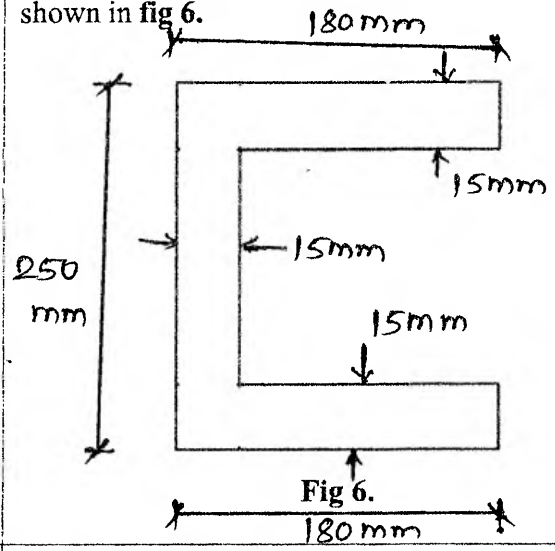
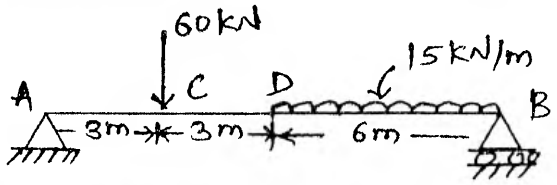
Assume suitable data wherever required and state it clearly.

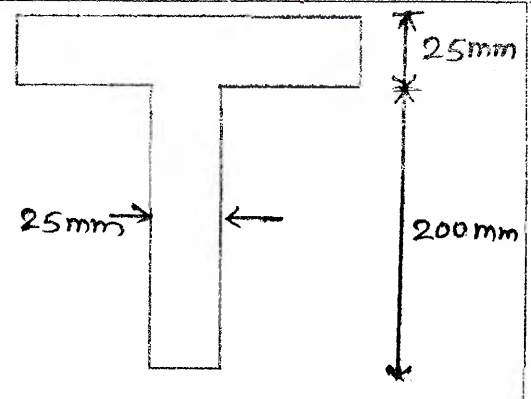
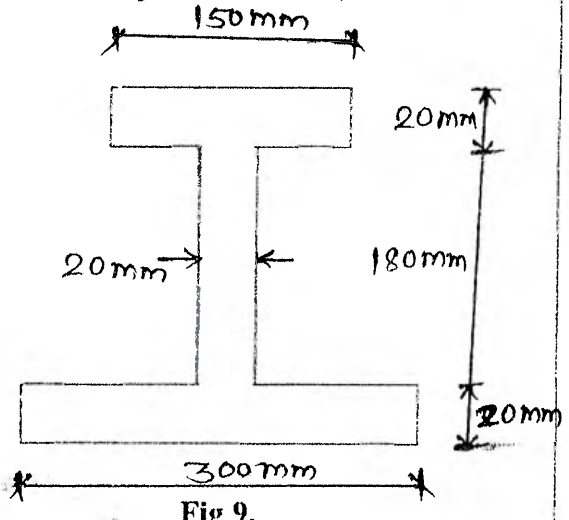
Master file.

Question No.		Maximum Marks	Course Outcome Number	Module No.
Q1.				
a)	Analyse the beam ABCDE and draw the axial force, shear force and bending moment diagrams. Also determine the maximum moment for beam AE. 	**15**	**01**	**03**
b)	State the assumptions made in Simple Theory of Bending.	**05**	**02**	**04**
Q2.				
a)	A cylindrical shell of internal diameter 250 mm is 6mm thick and is 3m long. When filled with fluid at an internal pressure 'p', there was change in its internal volume by 10000mm^3. Determine the fluid pressure 'p', circumferential stress and longitudinal stress induced in the shell. Also find the changes in its length and internal diameter. [Take E= 2x10^{5}N/mm^2, 1/m= 0.3]	**10**	**02**	**01**

b)	Determine the expression for total elongation of uniformly tapering circular section of diameters 'd_1' and 'd_2' respectively subjected to an axial load 'P'	06	02	01
c)	With the help of neat sketches, explain what is meant by the term 'Shear Centre'. Also state its importance.	04	01	06
Q3.				
a)	A composite bar made up of aluminium and steel is held between two supports as shown in **fig 1.** below. The bars are stress free at a temperature of 50°C. What will be the stresses in the two bars when the temperature is 25°C if: (i) The supports are non-yielding (ii) The supports come nearer to each other by 0.15mm. It can be assumed that the change in temperature is uniform all along the length of the bar. [Take E_s = 210GPa, E_a = 74GPa, α_s = 12x10^{-6}/°C, α_a = 24x10^{-6}/°C]  **Fig 1.**	08	02	01
	OR			
a)	A member ABCD is subjected to loads P_1, P_2, P_3 and P_4 as shown in **fig 2.**below. Calculate the force P_2, necessary for equilibrium if P_1=50kN, P_3=500kN and P_4=200kN. Determine the total elongation of member assuming modulus of elasticity as 2.1x10^{5}N/mm^2. Given: Lengths: l(AB)= 1500mm, l(BC)= 500mm, l(CD)=1000mm. Areas: Ar(AB) = 700mm^2, Ar(BC) =3000mm^2, Ar(CD) = 1300mm^2  **Fig 2.**	08	02	01

b)	At a point in a strained material, the state of stress is as shown in **fig 3.**below. Calculate the normal stress, shear stress and principal stresses along the plane AB inclined at 30° with the major stress by analytical method. Also verify the results graphically by Mohr's circle.  **Fig.3**	**12**	**02**	**02**
Q4.				
a)	With usual notations, derive the torsion formula for a circular shaft subjected to equal and opposite torque, 'T'. Also state the assumptions made in deriving this formula.	**10**	**02**	**06**
b)	A cantilever of rectangular cross section is 150mm wide and 300mm deep and carries a UDL & a point load as shown in **fig 4**. Find the deflection and slope at the free end. [Take E=10000N/mm²]  **Fig 4.**	**10**	**03**	**07**
Q5.				
a)	A 100x100x15mm angle section as shown in **fig 5.** is used as a simply supported beam over a span of 3.5m. It carries a load 600N along the line YG, where 'G' is the centroid of the section. Calculate: i) Stresses at the points P, Q and R of the mid section of the beam. ii) Position of neutral axis [Take E =200GPa]  **Fig 5.**	**12**	**02**	**04**

b)	Locate the shear centre for the channel section shown in **fig 6.**  **Fig 6.**	**08**	**02**	**06**
Q6.				
a)	Find the maximum and minimum stress intensities at the base of a uniform circular chimney, having external and internal diameters as 7m and 4m. The height of the chimney is 30m and is subjected to a wind pressure of 2 kN/m². The density of the masonry may be taken as 21 kN/m³.	**08**	**02**	**05**
b)	A steel beam of cross section 200mm x 400mm which is simply supported at its ends is loaded as shown in **fig 7.** Find the slope at each ends (A & B) and deflections at points C and D. [Take E=200GPa]  **Fig 7.**	**06**	**03**	**07**
c)	Derive the bending equation,	**06**	**02**	**04**
	OR			
c)	Draw the stress-strain curve for mild steel and indicate and explain the following terms in detail: (i) elastic limit (ii) yield stress (iii) ultimate stress (iv) breaking point (v) strain hardening region.	**06**	**02**	**01**
Q7.				
a)	A cantilever cast iron bracket of span 6m and cross section as shown in **fig 8.** supports a UDL of 40kN/m throughout the span. Sketch the shear stress variation at the mid span of the beam.	**07**	**01&02**	**06**

	 **Fig 8.**			
b)	A simply supported beam of span 8m and cross section as shown in **fig 9.**is subjected to UDL of 'w'kN/m over the whole span. If the tensile and compressive stress is not to exceed 100MPa and 150MPa respectively, calculate what is the maximum intensity of UDL 'w', the beam can carry.  **Fig 9.**	**07**	**01&02**	**04**
c)	A solid circular shaft has to transmit a power of 200 kW at 120 rpm. If the shear stress is not to exceed 50 N/mm^2 and the twist in length of 4m does not exceed 1°, find the suitable diameter of the shaft. [Take Modulus of rigidity, G = 80x10^3 N/mm^2]	**06**	**02**	**06**

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S.Y. Civil - Sem III

Bharatiya Vidya Bhavan's

Sardar Patel College of Engineering

(A Government Aided Autonomous Institute)
Munshi Nagar, Andheri (West), Mumbai – 400058.

End Semester Examinations
(Civil Engineering)
November 2017

Q. P. Code:
Duration: Three Hours
Program: U.G. (B. Tech. Civil)
Course Code : BTC205

Max. Marks: 100
Class: ***S.Y. (Civil), Semester: III***
Name of the Course: Engineering Geology

Master file.

Instructions:

1. Attempt ***Any Five*** questions
2. All questions carry equal marks
3. Answer to each question to be started on the fresh page
4. Assume suitable data if necessary and mention it clearly.
5. Draw neat diagrams.

1. a. Give the name of the mineral — 5
   i. One set of cleavage, black colour, pearly lustre
   ii. Cherry red streak, metallic lustre, botroidal form
   iii.

   b. Define the following terms — 5
   i. Aquifer
   ii. Aquifuge
   iii. Aquitard
   iv. Sorting
   v. Anhedral

   c. Draw diagrams of the following — 2 x 5
   i. Yardang
   ii. Seif Dune
   iii. Porphyritic texture
   iv. Translational landslide
   v. Rock Cycle

2. a. Draw a diagram of the different stages of the ox bow lake formation and explain the process of the same. — 10

   b. What are the ways in which mechanical weathering can take place? — 10

3. a. Draw the internal structure of the Earth and explain the various layers. — 10

   b. Draw diagrams of different kinds of dunes and explain how wind works as a weathering agent. — 10

(P.T.O.)

S.Y.B Tech. Civil - Sem III

4. a. How can folds be classified according to the orientation of the axial plane? 10

   b. What are the different types of forces that act on a gravity dam? If the dam is to be constructed on an antiform fold, then which part of the fold is most suitable for construction of the dam? 10

5. a. Describe the different types of normal faults with suitable diagrams. 10

   b. How can faults be recognized in the field? 10

6. Write short notes on the following. 5 x 4
   i. Barchan Dune
   ii. Porphyritic texture
   iii. Sorting and packing
   iv. Factors of metamorphosis

7. Describe the formation of the Himalayas on the principles of Plate Tectonic theory. 20

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B.Tech. Civil. Sem III

Bharatiya Vidya Bhavan's

Sardar Patel College of Engineering

(A Government Aided Autonomous Institute)

Munshi Nagar, Andheri (West), Mumbai – 400058.

End Semester EXAM

Q. P. Code:

Max. Marks: 100 Duration: 3 Hrs

Class: B.Tech Semester: III Program: Civil Engineering

Name of the Course: Building Construction Course Code : BTC 206

Master file.

Instructions:

1. **Q.1 is compulsory & solve any four remaining six.**
2. **Illustrate answer with neat sketches wherever required.**
3. **Make suitable assumptions where necessary and state them clearly.**
4. **Use Drawing sheet for only question no.3**

Question No		Max. Marks	Course Outcome Number	Module no.
Q.1	**Write a short note on following points (Any four)** a) Grease Trap in Plumbing b) Underpinning c) Brick Flooring d) Framed & Panelled doors e) Brick Stone Composite Masonry f) Basic components of building	20	1,2,3,	1-7
Q.2	A) Compare Brick Masonry Vs. stone masonry and Explain defects in brick masonry **(any four points each)** Also draw & explain English bond for one & half brick thick wall.	10	01	02
	B) Explain following types of Masonry in details 1) Square Rubble Masonry 2) Polygonal Rubble masonry	06		
	C) Explain shortly method of Plastering	04		
Q.3	A) Draw a neat sketch of following types of doors, 1) Battened, ledged, framed & braced door 2) Louvered Door	04	01	03
	B) Draw a neat sketch of following types of windows, 1) Pivoted Window 2) Double Hung Window	04		
	C) Design a dog-legged stair for residential building having staircase hall inside dimension is 2.00 M X 4.60 M. the height of floor is 3.30 M & roof consists of R.C.C. Slab of 12 CM thickness. Draw a plan & sectional elevation which is passing through stair.	12		
Q.4	A) Write a short note on: Sloping Roof	08	01	04
	B) Write a short note on following types of floorings	08		

B.Tech. Civil. Sem III

	1) Mud & Murum Flooring 2) Stone flooring			
	C) What factors to be considered while selecting type of flooring? **(any four)**	04		
Q.5	A) Explain fire protection systems provided in building to resist fire load with sketch **(any two)** Also explain fire resisting properties of common building materials. **(any four)**	08	02	06
	B) Compare steel formwork Vs. Timber Formwork **(any four points)** Also explain any two method of scaffolding.	08	01	05
	C) Explain sound insulation methods for various condition of source.	04	02	06
Q.6	A) Explain the piping systems in plumbing services for a Building with a neat sketches & details.	08	02	06
	B) What is Damp Proofing? Explain its causes & effects over building structures. **(any two)** Also explain how DPC should be provided with sketches.	08	03	
	C) Explain shortly the reasons responsible for water leakage in building. **(any four)**	04	03	
Q.7	A) What do you understand by "Green Building"? Also explain advantages of Green Building. **(any five)**	10	01	07
	B) Explain the all criteria's given by LEED's rating agency for certifying green building.	10		

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S.Y.B.Tech. Civil. Sem III

Bharatiya Vidya Bhavan's

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END SEMESTER Examination

November 2017

9

Maximum Marks: **100** Duration: **3 hour**

Class: **S.Y.B.Tech** Semester: **III** Program:**Civil Engineering**

Name of the Course: **Engineering Mathematics III** Course Code : **BTC201**

Master file.

Instructions:

- Attempt any FOUR questions out of remaining SIX questions.
- Question number.**1** is **compulsory**.
- Answers to all sub questions should be **grouped** together.

Q		Marks	CO	Module No.
1(a)	If $A=\begin{pmatrix} 2 & 3 \\ -3 & -4 \end{pmatrix}$ prove that $A^{100}=\begin{pmatrix} -299 & -300 \\ 300 & 301 \end{pmatrix}$.	5	4	7
(b)	Find Laplace transforms of $f(t)=\sin^7 t$	5	1	1
(c)	Obtain the Fourier series for $f(x)=\begin{cases} 1+\frac{2x}{\pi} & -\pi<x<0 \\ 1-\frac{2x}{\pi} & 0<x<\pi \end{cases}$	5	2	4
(d)	Find the image and draw a rough sketch of the mapping of the region $1\le x\le 2$ and $2\le y\le 3$ under the mapping $w=e^z$	5	3	5
2 (a)	Find the eigen values and eigen vectors of the matrix. $A=\begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$	6	4	7
(b)	Prove that $\int_0^\infty \frac{\sin 2t+\sin 3t}{te^t}dt=\frac{3\pi}{4}$	6	1	2
(c)	If $f(x)=x \quad 0\le x\le 2$ Find half range cosine series using Parseval's identity deduce $\frac{\pi^4}{96}=\frac{1}{1^4}+\frac{1}{3^4}+\frac{1}{5^4}+------$	8	2	5
3 (a)	Prove that the following function is analytic $f(z)=\cosh z$	6	3	5

S.Y B.Tech. Civil - Sem III

(b)	Show that the matrix $A=\begin{bmatrix} 0 & c & -b \\ -c & 0 & a \\ b & -a & 0 \end{bmatrix}$ satisfies Cayley-Hamilton's theorem	6	4	7
(c)	Find L $\left[\frac{d}{dt}\left(\frac{1-\cos 2t}{t}\right)\right]$	8	1	1
4 (a)	Find the Fourier series for $f(x)=\begin{cases} 0 & -\pi \le x \le 0 \\ x & 0 \le x \le \pi \end{cases}$	6	2	4
(b)	Find the Laplace transforms of f(t), where $f(t)=\begin{cases} t^2, 0<t<1 \\ 0, t>1 \end{cases}$	6	1	1
(c)	If f (z) is a regular function of z, prove that $\left(\frac{\partial^2}{\partial x^2}+\frac{\partial^2}{\partial y^2}\right)\lvert f(z)\rvert^2 = 4\lvert f'(z)\rvert^2$.	8	3	5
5 (a)	Evaluate: $L^{-1}\left\{\log\left\lvert\frac{s^2+b^2}{s^2+a^2}\right\rvert\right\}$	6	1	2
(b)	Find non – singular matrices P, Q so that PAQ is a normal form where $A=\begin{bmatrix} 2 & 1 & -3 & -6 \\ 3 & -3 & 1 & 2 \\ 1 & 1 & 1 & 2 \end{bmatrix}$	6	4	6
(c)	Find the Fourier sine series for the function $f(x)=e^{ax}$ for $0<x<\pi$ where a is constant	8	2	4
6(a)	Evaluate: $L^{-1}\left\{\frac{s^2+2s+3}{(s^2+2s+2)(s^2+2s+5)}\right\}$	6	1	2
(b)	For what values of λ and μ the linear equations. $x+2y+z=8$ $2x+2y+2z=13$ $3x+4y+\lambda z=\mu$ have i)No solution ii) A unique solution iii)infinite number of solutions	6	4	6

S.Y.B.Tech. Civil- Sem III

(c)	Find the analytic function $f(z)=u+iv$ such that $u-v=e^{x}(\cos y-\sin y)$	**8**	**3**	**5**
7 (a)	Obtain complex form of the Fourier series of the function the $f(x)=\begin{cases}0 & -\pi\le x\le 0\\ 1 & 0\le x\le\pi\end{cases}$	**6**	**2**	**4**
(b)	Evaluate: $L^{-1}\left\{\log\left(1+\frac{1}{s^2}\right)\right\}$	**6**	**1**	**2**
(c)	Solve $y''-3y'+2y=4e^{2t}$ Given $y(0)=-3$ $y'(0)=5$	**8**	**1**	**2**