Roll No. _____   Total No of Pages: 3

21505/11505

21505/11505

21505/11505
B. Tech. I/II Sem. (Main/Back) Exam., Dec. – 2019
1FY1-05 Human Values
3AN1 – 02 Technical Communication

Time: 2 Hours   **Maximum Marks: 80**

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 5 × 2 marks = 10 marks. All five questions are compulsory.

Part – B: Analytical/Problem Solving questions 4 × 10 marks = 40 marks. Candidates have to answer four questions out of six.

Part – C: Descriptive/Analytical/Problem Solving questions 2 × 15 marks = 30 marks. Candidates have to answer two questions out of three.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

PART - A

Q.1 Describe Trust and Respect as a human value.   [2]

मानवीय मूल्य के रूप में विश्वास और सम्मान का विवेचन कीजिए।

Q.2 Explain four orders of nature.   [2]

प्रकृति की चार अवस्था की व्याख्या करें।

Q.3 Harmony in family and society. Explain.   [2]

परिवार और समाज में सामंजस्य की व्याख्या करें।

Q.4 Explain "Sadhan Viheen Dukhi Daridra" and "Sadhan Sampan Dukhi Daridra". [2]

व्याख्या कीजिए – 'साधन विहीन दुखी दरिद्र' और 'साधन सम्पन दुखी दरिद्र'।

Q.5 What do you understand by Right Understanding? [2]

आप सही समझ से क्या समझते हैं?

PART – B

Q.1 Define Self Exploration. Explain the process of self–exploration with a diagram. [10]

आत्म अन्वेषण की परिभाषा दीजिए तथा स्व अन्वेषण प्रक्रिया को सचित्र समझाइए।

Q.2 Explain the relationship between "Relationship". "Physical Facilities" and "Right Understanding". Distinguish these on the basis of Animal Consciousness and Human Consciousness. [10]

'सम्बंध'. 'भौतिक सुविधा' और 'सही समझ' के बीच सम्बंध बताते हुए. जीव चेतना व मानव चेतना के आधार पर इनमें अन्तर लिखिए।

Q.3 What is Sanyam (self-control). and Swasthya (Health)? Discuss the aspects of Sanyam and Swasthya. https://www.btubikaner.com [10]

संयम और स्वास्थ्य क्या है? संयम और स्वास्थ्य के पहलुओं को समझाइए।

Q.4 Explain all values in human in human relationships. [10]

मानवीय संबंधों में समी मूल्यों की व्याख्या करें।

Q.5 "The state of harmony or lack of it in the self has a strong influence on the health of the body". Explain. [10]

'सामंजस्य की स्थिति या इसकी कमी मानव शरीर के व्यवस्था पर गहरा प्रभाव डालती है। समझाइए।

Q.6 What are the basic guidelines of value education? [10]

नैतिक शिक्षा की बुनियादी दिशानिर्देश क्या है?

PART – C

Q.1 What do you mean by the statement existence as co-existence? [15]

सह—अस्तित्व के रूप में अस्तित्व से आप क्या समझते हो?

Q.2 Critically examine the state of the society today in context with the fulfilment of comprehensive human goal. [15]

'समाज की स्थिति गंभीर है'। इस वाक्य की व्याख्या व्यापक मानव लक्ष्य को आधार मानकर कीजिए।

Q.3 What are the four orders in nature? Briefly explain them. [15]

प्रकृति की चार अवस्था क्या है? संक्षेप में उन्हे समझाएं।

Roll No. _____   Total No of Pages: 4

11501

11501

B. Tech. I Sem. (Back) Exam., May - 2019

BSC

1FY2 – 01 Engineering Mathematics - I

Time: 3 Hours   **Maximum Marks: 160**

Instructions to Candidates:

Part – A: *Short answer questions (up to 25 words) 10 ×3 marks = 30 marks. All ten questions are compulsory.*

Part – B: *Analytical/Problem solving questions 5 × 10 marks = 50 marks. Candidates have to answer five questions out of seven.*

Part – C: *Descriptive/Analytical/Problem Solving questions 4 × 20 marks = 80 marks. Candidates have to answer four questions out of five.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. <u>NIL</u>   2. <u>NIL</u>

PART - A

Q.1   What is the value of $\Gamma\left(-\frac{1}{2}\right)\Gamma\left(\frac{1}{2}\right)$?

Q.2   Write the formula of surface area of solid of revolution when the revolution is about x – axis.

Q.3   Find whether series $\Sigma\ \frac{n}{n+10}$ is convergent or not?

Q.4 Give an example of a divergent series whose sum is convergent.

Q.5 State Parseval's theorem.

Q.6 Find sum of Fourier series of periodic function f(x) at $x = 2$, where

$$f(x) = \begin{cases} 0, & 0 \le x < 1 \\ 1, & 1 \le x < 2 \end{cases}$$

Q.7 Give an example of function which is not continuous at origin although partial derivatives exist.

Q.8 Evaluate $\int\limits_{0}^{\pi}\int\limits_{0}^{1} \sin y\, dy\, dx$.

Q.9 Write the formula of centre of gravity of plane lamina occupying an area A in the xy – plane and having density p = f (x, y).

Q.10 State the Gauss divergence theorem.

PART –B

Q.1 Use gamma function, show that –

$$\int\limits_{0}^{\infty} \frac{1}{1+y^4}\, dy = \frac{\pi}{2\sqrt{2}}$$

Q.2 Test the convergence of the series

$$\sum\limits_{n=1}^{\infty} \frac{1^2.5^2.9^2...(4n-3)^2}{4^2.8^2.12^2...(4n)^2}$$

Q.3 Find Fourier series of x^2 in (-π, π), and use Parseval's identity to prove

$$\frac{\pi^4}{90} = 1 + \frac{1}{2^4} + \frac{1}{3^4} + \cdots$$

Q.4 Find the equation of the tangent plane and normal to the surface $xyz = 4$ at the point $(1, 2, 3)$.

Q.5 Find the minimum value of the function $f(x) = x^2 + xy + y^2 + \dfrac{1}{x} + \dfrac{1}{y}$

Q.6 Change the order of integration and hence solve

$$\int_{0}^{1}\int_{e^x}^{e}\frac{1}{\log y}dxdy$$

Q.7 Verify Stokes' theorem when $\vec{F} = x^2 i + xy \, j$, where C is the perimeter of the square in xy – plane whose sides are along the lines $x = 0$, $y = 0$, $x = a$ and $y = a$.

PART –C

Q.1 (a) Find the volume generated by revolving the portion of the parabola $y^2 = 4ax$ cut off by its latus rectum about y – axis.

(b) Expand $\sin x$ in powers of $(x - \pi/2)$ by Taylor's series.

Q.2 (a) Prove that –

$$e^x = 1 + \tan x + \frac{1}{2!}\tan^2 x - \frac{1}{3!}\tan^3 x - \frac{7}{4!}\tan^4 x + \cdots$$

(b) Find the Fourier series to represent $f(x) = x - x^2$ in $-1 < x < 1$.

Q.3 (a) Use Lagrange's method of multiplier to divide 24 into three parts such that the continued product of the first, square of the second and cube of the third may be maximum.

(b) Find the half range sine and cosine series of $f(x) = x$ in $(0, \pi)$.

Q.4 (a) If $\vec{r} = xi + yj + zk$, then find:

     (i)   div $(r^n \vec{r})$

     (ii) curl $(r^n \vec{r})$

  (b) Find the area of the region lying in first quadrant enclosed by the circle

     $x^2 + y^2 = a^2$ and the line $x + y = a$ by double integration.

Q.5 (a) Apply Green's theorem to evaluate $\int\limits_{C} (x^2 = \cosh y)dx + (y + \sin x)\,dy$, where C is

     the rectangle with vertices $(0, 0)$, $(\pi, 0)$, $(\pi, 1)$, $(0, 1)$.

  (b) If $u = e^{xyz}$, then prove that

$$\frac{\partial^3 u}{\partial x\, \partial y\, \partial z} = (1 + 3xyz + x^2y^2z^2)e^{xyz}$$

Roll No. _____

11501

Total No of Pages: 3

11501

11501
B. Tech. I - Sem. (Main/Back) Exam., Dec. - 2019
BSC
1FY2-01 Engineering Mathematics - I

Time: 3 Hours

Maximum Marks: 160

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 10 × 3 marks = 30 marks. All ten questions are compulsory.

Part – B: Analytical/Problem Solving questions 5 × 10 marks = 50 marks. Candidates have to answer five questions out of seven.

Part – C: Descriptive/Analytical/Problem Solving questions 4 × 20 marks = 80 marks. Candidates have to answer four questions out of five.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

PART - A

Q.1 Evaluate: $\dfrac{\sqrt{\frac{1}{3}}\sqrt{\frac{5}{6}}}{\sqrt{\frac{2}{3}}}$ [3]

Q.2 Evaluate: $\int_0^2 \dfrac{x^2}{\sqrt{(2-x)}}\,dx$ [3]

Q.3 The Part of the Parabola $y^2 = 4ax$ cut off by the latus rectum revolves about the tangent at the vertex. Find the Volume of the reel thus generated. [3]

Q.4 Find the Surface of the solid generated by the revolution of the asteroid $x = a \cos^3 t$, $y = a \sin^3 t$ about the x-axis. [3]

Q.5 Show that the following function is discontinuous at (0, 0): [3]

$$f(x, y) = \begin{cases} \frac{xy^3}{x^2 + y^6}, & (x, y) \neq (0, 0) \\ 0, & (x, y) = (0, 0) \end{cases}$$

Q.6 If $u = \sec^{-1}\left(\frac{x^3 + y^3}{x + y}\right)$, then prove that: [3]

$$x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = 2\cot u$$

Q.7 Find the derivative of the function at P_0 in the direction of u: [3]

$f(x, y) = 2xy - 3y^2$, $P_0 (5, 5)$, $u = 4i + 3j$

Q.8 Find the tangent plane to the surface $z = x \cos y - ye^x$ at (0, 0, 0). [3]

Q.9 Find the max or min value of the following function: [3]

$$u = xy + \frac{a^3}{x} + \frac{a^3}{y}$$

Q.10 Evaluate: $\iiint xyz \, dx \, dy \, dz$ [3]

where the region of integration is the complete ellipsoid:

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} \leq 1$$

PART – B

Q.1 Show that a Sequence is convergent iff ($\Leftrightarrow$) it is a Cauchy Sequence. [10]

Q.2 Test the convergence of the following series: [10]

$$\frac{2x}{1^2} + \frac{3^2 x^2}{2^3} + \frac{4^3 x^3}{3^4} + \frac{5^4 x^4}{4^5} + \ldots\ldots\ldots\ldots$$

Q.3 Find half –range sine series for the function $f(x) = x$ in the interval $0 < x < 2$. [10]

Q.4 If $r = |\vec{r}|$, where $\vec{r} = x\hat{i} + y\hat{j} + 3\hat{k}$, then prove that $\nabla^2 f(r) = f''(r) + \frac{2}{r} f'(r)$. [10]

Q.5 Find the constant a so that $\vec{V}$ is a conservative vector field, where [10]

$\vec{V} = (axy - z^3)\hat{i} + (a - 2)x^2\hat{j} + (1 - a)xz^2\hat{k}$. Calculate its potential and work done, in

moving a particle from (1, 2, -3) to (1, -4, 2) in the field.

Q.6 Evaluate the following double integral by changing the order of integration: [10]

$$\int_0^{\frac{a}{\sqrt{2}}} \int_x^{\sqrt{a^2 - x^2}} y^2 \, dx \, dy$$

Q.7 Find the center of gravity (C.G.) of the area in the positive quadrant of the curve: [10]

$$x^{\frac{2}{3}} + y^{\frac{2}{3}} = a^{\frac{2}{3}}$$

PART – C

[20]

Q.1 Show that:

$$\int_0^{\frac{\pi}{2}} \sin^m\theta \cos^n\theta \, d\theta = \frac{\left|\frac{(m+1)}{2}\right| \left|\frac{(n+1)}{2}\right|}{2 \left|(m+n+2)/2\right|}$$

Q.2 Find the Fourier series of the function $f(x) = x + x^2$ in the interval $(-\pi, \pi)$ and show that

$$\frac{\pi^2}{6} = 1 + \frac{1}{2^2} + \frac{1}{3^2} + \ldots \ldots$$ http://www.mgsuonline.com [20]

Also find the sum of the series when $x = \pm\pi$.

Q.3 Prove that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = \frac{\partial^2 u}{\partial \xi^2} + \frac{\partial^2 u}{\partial n^2}$ [20]

where $x = \xi\cos\alpha - n\sin\alpha$, $y = \xi\sin\alpha + n\cos\alpha$

Q.4 Find the volume bounded above by the sphere $x^2 + y^2 + z^2 = 2a^2$ and the paraboloid

$az = x^2 + y^2$. [20]

Q.5 Verify Gauss's divergence theorem given that $\vec{F} = 4xz\hat{i} - y^2\hat{j} + yz\hat{k}$ and S is surface of

the cube bounded by the planes $x = 0$, $x = 1$, $y = 0$, $y = 1$, $z = 0$ and $z = 1$. [20]

Roll No. _____

21503/11503

Total No of Pages: 3

21503/11503
B. Tech. I/II Sem. (Main/Back) Exam., Dec. - 2019
BSC
2FY2-03 Engineering Chemistry

Time: 3 Hours

Maximum Marks: 160

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 10 ×3 marks = 30 marks. All ten questions are compulsory.

Part – B: Analytical/Problem Solving questions 5 ×10 marks = 50 marks. Candidates have to answer five questions out of seven.

Part – C: Descriptive/Analytical/Problem Solving questions 4 ×20 marks = 80 marks. Candidates have to answer four questions out of five.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1. NIL _____ 2. NIL _____

PART - A

Q.1 What is softening of Water? [3]

Q.2 Importance of anti-knocking agents. [3]

Q.3 What is cracking in petroleum? [3]

Q.4 Pilling Bedworth's rule in dry corrosion. [3]

Q.5 Sacrificial anode method of corrosion protection. [3]

Q.6 What is false setting in cement? [3]

Q.7 Properties and uses of Borosilicate glass. [3]

Q.8 Importance of flash and fire point in lubricants. [3]

Q.9 Calgon conditioning in boilers. [3]

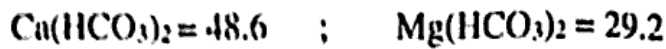Q.10 Elimination reaction in alkyl halide with example. [3]

PART – B

Q.1 Discuss the formation, troubles and preventions of Scales in boilers. [3+3+4=10]

Q.2 What is calorific value of fuel? Describe the determination calorific value of gaseous fuel with Junkers Calorimeter. [3+7=10]

Q.3 Explain the property of setting and hardening of cement with reactions. [10]

Q.4 What are lubricants? Explain the thin layer mechanism of lubrication. [4+6=10]

Q.5 Explain SN2 substitution reactions with example. [10]

Q.6 What is potable water? What are the properties for a good quality potable water? Explain sterilization of water through chlorinator. http://www.mgsuonline.com [2+4+4=10]

Q.7 Describe synthesis, properties and uses of Asprin. [5+3+2=10]

PART – C

Q.1 (a) Explain water softening by Zeolite method with diagram. [15]

(b) Zeolite softener was used to remove the hardness of 90,000 liters of hard water. The softener required 450 liters of NaCl solution having concentration of 16 grams / liter. Calculate the hardness of hard water. [5]

Q.2 (a) What is metallurgical coke? Describe Otto – Hoffmann by-product oven method of coke preparation. [4+8=12]

(b) A sample of water on analysis has been found to contain the following impurities in mg/liter – [8]

$$Ca(HCO_3)_2 = 48.6 \quad ; \quad Mg(HCO_3)_2 = 29.2$$

$$MgCl_2 = 3.8 \quad ; \quad MgSO_4 = 4.8$$

$$CaCl_2 = 33.3 \quad ; \quad CaSO_4 = 54.4$$

Calculate the quantity of Lime and Soda for softening 10^6 litres of water.

Q.3 (a) Explain the stress corrosion with Suitable example. [6]

(b) Break point chlorination method. [7]

(c) Explain proximate analysis of coal. [7]

Q.4 What is Portland cement? Describe manufacturing of Cement by Rotatory Kiln Technology with diagram and reactions involved in the process. [4+8+8=20]

Q.5 (a) Describe measurement of Viscosity of Oil with redwood Viscometer No. 1. [8]

(b) Explain determination of hardness of water by a complexometric titration method. [8]

(c) A Coal Sample on an analysis have a following composition by weight – [4]

$$C = 85\% \quad ; \quad O = 2.5\%$$

$$N = 1.0\% \quad ; \quad ash = 3.0\%$$

Calculate minimum amount air by weight required for completer combustion of 2.5 kg of Coal.

21504/11504

21504/11504

B. Tech. I/II Sem. (Main/Back) Exam., Dec. - 2019

BSC

2FY1-04 Communication Skill

Maximum Marks: 80

Time: 2 Hours

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 5 ×2 marks = 10 marks. All five questions are compulsory.

Part – B: Analytical/Problem Solving questions 4 ×10 marks = 40 marks. Candidates have to answer four questions out of six.

Part – C: Descriptive/Analytical/Problem Solving questions 2 ×15 marks = 30 marks. Candidates have to answer two questions out of three.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1. NIL   2. NIL

PART - A

Q.1 Define formal communication and write the types of formal communication.   [2]

Q.2 What do you mean by Conditional Sentences? Write an example of probable condition.   [2]

Q.3 List the components of a business letter.   [2]

Q.4 Why couldn't the narrator bring himself to break journey at Deoli?   [2]

Q.5 What does the poet mean by 'mind is without fear'.   [2]

PART - B

Q.1 What do you understand by non-verbal communication? Explain its types.   [2+8=10]

Q.2 What are the qualities of good communication? What are the sender oriented barriers?

[5+5=10]

Q.3 (a) *Change the voice of the* following:-

[1×2=2]

    (i)   What inspired you to write this poem?

    (ii) Somebody cleaned my shoes and brushed my suit.

  (b) Change the following sentences into indirect speech: [2×1=2]

    (i)   He said to me, "Let us go for a walk."

    (ii) I said to him, "Do you take exercise daily."

  (c) Supply the correct Modals: [2×1=2]

    (i)   You .... come in time. (Obligation)

    (ii) Car .... parked here. (Prohibition)

  (d) Complete the following conditional sentences: [2×1=2]

    (i)   If I were a millionaire, I ....

    (ii) If the car hadn't broken down, ...

  (e) Combine the following sentences using linking words.   [2×1=2]

    (i)   She wasn't very rich. She gave money to the beggar.

    (ii) He left early. He wanted to arrive on time.

Q.4 Write a report on the blood donation camp in your college. [10]

Q.5 What is the significance of the title "How Much Land a Man Need?" [10]

Q.6 List the qualities which according to the poet transforms a boy into a man the poem "If". [10]

PART – C

Q.1 Define communication and write its importance in organizations. Explain the process of communication. [3+6+6=15]

Q.2 What is the massage of poem 'No Men are Foreign'? [15]

Q.3 Write a paragraph on any one of the following:- [15]

(a) Unemployment among Engineers

(b) A Memorable Journey

(c) Honesty is the Best Policy

21507/11507

21507/11507

B. Tech. I/II Sem. (Main/Back) Exam., Dec. - 2019
ESC
2FY3-07 Basic Mechanical Engineering

Time: 2 Hours   **Maximum Marks: 80**

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 5 × 2 marks = 10 marks. All five questions are compulsory.

Part – B: Analytical/Problem Solving questions 4 × 10 marks = 40 marks. Candidates have to answer four questions out of six.

Part – C: Descriptive/Analytical/Problem Solving questions 2 × 15 marks = 30 marks. Candidates have to answer two questions out of three.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

PART - A

Q.1 State the fundamental laws of thermal engineering.   [2]

Q.2 In what applications Reciprocation pumps are used?   [2]

Q.3 Differentiate between belt and rope drives.   [2]

Q.4 What is the principle of Gas Cutting process?   [2]

Q.5 What do you mean by relative humidity?   [2]

PART – B

Q.1 Compare water tube and fire tube boilers. What are the different applications of boilers? [6+4=10]

Q.2 Explain the working of 2-storke petrol engine with the help of a neat diagram. [10]

Q.3 Derive an expression for the length of belt for an open belt drive. [10]

Q.4 Explain the working of a Centrifugal pump with the help of a neat sketch. [10]

Q.5 Briefly describe the different type of welding methods and their applications. [10]

Q.6 What are the main mechanical properties? Describe each in brief. [10]

PART – C

Q.1 An open belt drive connects two pulleys 120 cm and 50cm diameters, on parallel shafts 4m apart. The maximum tension in the belt is 1855.3 N, coefficient of friction is 0.3. The driver pulley of 120 cm diameter runs at 200 rpm, calculate:

   (a) Power transmitted [5]

   (b) Torque exerted on driven shaft [5]

   (c) Belt length [5]

Q.2 (a) Describe the procedure for moulding with suitable sketches. [7]

   (b) What are the different metal forming processes? Explain each of them. [8]

Q.3 Write brief notes on:

   (a) Industrial Engineering [3]

   (b) Impulse and Reaction turbines [3]

   (c) Gear drive [3]

   (d) Brazing and Soldering [3]

   (e) Toughness and Resilience [3]

Roll No. _____

21508/11508

Total No of Pages: 3

21508/11508
B. Tech. I/II Sem. (Main/Back) Exam., Dec. - 2019
ESC
2FY3-08 Basic Electrical Engineering

Time: 2 Hours

Maximum Marks: 80

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 5 × 2 marks = 10 marks. All five questions are compulsory.

Part – B: Analytical/Problem Solving questions 4 × 10 marks = 40 marks. Candidates have to answer four questions out of six.

Part – C: Descriptive/Analytical/Problem Solving questions 2 × 15 marks = 30 marks. Candidates have to answer two questions out of three.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

PART - A

Q.1 Define Kirchhoff's laws with examples.   [2]

Q.2 What is resonance in series RLC circuit and what is the condition of series

resonance?   [2]

Q.3 What are the conditions of an Ideal Transformer?   [2]

Q.4 What do you mean by rotating magnetic field?   [2]

Q.5 Why earthing is important in electrical installations?   [2]

PART – B

Q.1 Obtain Thevenin's equivalent circuit across 'a b' of figure (1) - [10]
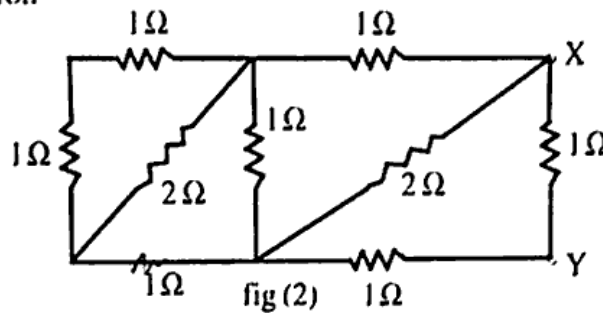

fig (1)
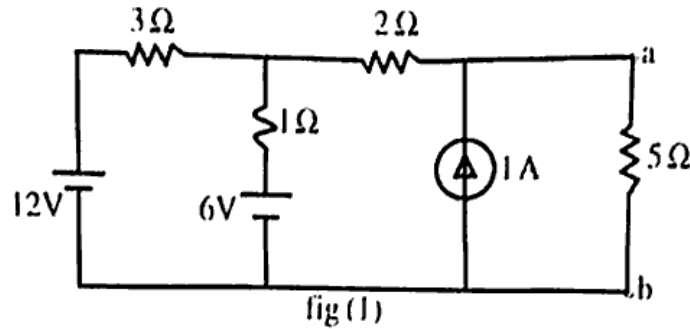
Q.2 (a) Draw and explain circuit of a transformer. [5]

(b) Obtain equivalent resistance across 'XY' in the figure (2) by star delta transformation- [5]

fig (2)

Q.3 (a) Describe speed control methods of 3 – phase Induction motor. [5]

(b) Draw and explain torque – slip characteristic of a 3 – phase Induction motor. [5]

Q.4 (a) Draw and explain DC – DC converter with neat sketches. [5]

(b) Draw and explain V – I characteristic of SCR. [5]

Q.5 Draw and explain type of Earthing. [10]

Q.6 (a) Write short note on MCB, ELCB and MCCB. [6]

(b) Write steps to obtain a Norton's equivalent circuit. [4]

PART – C

Q.1 Write the constructional features and working principle of operation of a Three phase

Induction Motor with suitable diagrams. [15]

Q.2 (a) Draw and explain the characteristics of IGBT. [9]

(b) Explain working principle and different parts of a synchronous generator in

brief. http://www.mgsuonline.com [6]

Q.3 (a) What do you mean by active, reactive and apparent power? [6]

(b) Explain method of power measurement in an electrical circuit. [6]

(c) What is the operating principle of a single phase Inverter? [3]

21509/11509

21509/11509
B. Tech. I/II Sem. (Main/Back) Exam., Dec. - 2019
ESC
2FY3-09 Basic Civil Engineering

Time: 2 Hours   **Maximum Marks: 80**

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 5 × 2 marks = 10 marks. All five questions are compulsory.

Part – B: Analytical/Problem Solving questions 4 × 10 marks = 40 marks. Candidates have to answer four questions out of six.

Part – C: Descriptive/Analytical/Problem Solving questions 2 × 15 marks = 30 marks. Candidates have to answer two questions out of three.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1. NIL _____   2. NIL _____

PART - A

Q.1 Write two important principles of surveying.   [2]

Q.2 Define Plinth area and Floor space index.   [2]

Q.3 Mention the types of road traffic signs in India.   [2]

Q.4 What do you mean by rain water harvesting?   [2]

Q.5 Explain Green House Effect.   [2]

PART – B

Q.1 Explain the impact of infrastructural development on economy of country with suitable examples. [10]

Q.2 How would you make linear measurements on sloping ground? Explain with neat sketches. [10]

Q.3 What are the important factors considered for selecting a site for buildings? [10]

Q.4 Define transportation engineering and discuss various types of roads with their important features. [10]

Q.5 Explain the important steps/processes of water treatment with a neat line diagram. [10]

Q.6 What do you understand by energy recovery from solid waste? Discuss various methods of energy recovery. [10]

PART – C

Q.1 (a) Differentiate between Whole Circle Bearing and Quadrant Bearing as well as Fore Bearing and Back Bearing. [3]

(b) Convert following QB to WCB :- [6]

   (i) S 60° 30' W

   (ii) N 32° 20' E

   (iii) N 32° 40' W

(c) Convert following Fore bearing to Back bearing :- [6]

   (i) 310° 45'

   (ii) 20° 30'

   (iii) S 60° 50' E

Q.2 Define environmental pollution and explain important Environmental Acts and Regulations Prevalent in India. [15]

Q.3 Explain noise pollution, its harmful effects and methods to control noise pollution. [15]