I/II (18 Scheme)

CBCS SCHEME

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18MAT11

First Semester B.E. Degree Examination, June/July 2019
Calculus and Linear Algebra

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. With usual notation, prove that $\tan\phi = r\left(\frac{d\theta}{dr}\right)$. **(06 Marks)**

b. Find the radius of curvature of $a^2y = x^3 - a^3$ at the point where the curve cuts the x-axis. **(06 Marks)**

c. Show that the evolute of the parabola $y^2 = 4ax$ is $27ay^2 = 4(x - 2a)^3$. **(08 Marks)**

OR

2 a. Prove that the pedal equation of the curve $r^n = a^n\cos n\theta$ is $a^n \cdot p = r^{n+1}$. **(06 Marks)**

b. Show that for the curve $r(1 - \cos\theta) = 2a$, ρ^2 varies as r^3. **(06 Marks)**

c. Find the angle between the polar curves $r = a(1 - \cos\theta)$ and $r = b(1 + \cos\theta)$. **(08 Marks)**

Module-2

3 a. Expand $\log(1 + \cos x)$ by Maclaurin's series up to the term containing x^4. **(06 Marks)**

b. Evaluate $\lim_{x \to 0}\left\{\frac{a^x + b^x + c^x}{3}\right\}^{1/x}$ **(07 Marks)**

c. Find the extreme values of the function $f(x, y) = x^3 + y^3 - 3x - 12y + 20$. **(07 Marks)**

OR

4 a. If $u = f\left(\frac{x}{y}, \frac{y}{z}, \frac{z}{x}\right)$ then prove that $x \cdot \frac{\partial u}{\partial x} + y \cdot \frac{\partial u}{\partial y} + z \cdot \frac{\partial u}{\partial z} = 0$ **(06 Marks)**

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

c. A rectangular box, open at the top, is to have a volume of 32 cubic feet. Find the dimensions of the box, if the total surface area is minimum. **(07 Marks)**

Module-3

5 a. Evaluate by changing the order of integration

$$\int_0^a \int_0^{2\sqrt{ax}} x^2 \cdot dy \cdot dx \ , \quad a > 0$$ **(06 Marks)**

b. Find the area bounded between the circle $x^2 + y^2 = a^2$ and the line $x + y = a$. **(07 Marks)**

c. Prove that $\beta(m, n) = \frac{\lfloor m \cdot \lfloor n}{\lfloor m+n}$ **(07 Marks)**

OR

6 a. Evaluate $\int_{-c}^{c}\int_{-b}^{b}\int_{-a}^{a}(x^2+y^2+z^2)\,dz.dy.dx$ **(06 Marks)**

b. Find the area bounded by the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ by double integration. **(07 Marks)**

c. Show that $\int_{0}^{\pi/2}\frac{d\theta}{\sqrt{\sin\theta}}\times\int_{0}^{\pi/2}\sqrt{\sin\theta}.d\theta=\pi$ **(07 Marks)**

Module-4

7 a. Solve $(1+e^{x/y})dx+e^{x/y}\left(1-\frac{x}{y}\right)dy=0$ **(06 Marks)**

b. If the air is maintained at 30°C and the temperature of the body cools from 80°C to 60°C in 12 minutes. Find the temperature of the body after 24 minutes. **(07 Marks)**

c. Solve $yp^2+(x-y)p-x=0$. **(07 Marks)**

OR

8 a. Solve $\frac{dy}{dx}+y\cdot\tan x=y^3\cdot\sec x$ **(06 Marks)**

b. Find the orthogonal trajectory of the family of the curves $r^n\cdot\cos n\theta=a^n$, where a is a parameter. **(07 Marks)**

c. Solve the equation $(px-y)\cdot(py+x)=2p$ by reducing into Clairaut's form taking the substitution $X=x^2$, $Y=y^2$. **(07 Marks)**

Module-5

9 a. Find the rank of the matrix

$$A=\begin{pmatrix}1 & 2 & -2 & 3\\ 2 & 5 & -4 & 6\\ -1 & -3 & 2 & -2\\ 2 & 4 & -1 & 6\end{pmatrix}$$ by applying elementary Row transformations. **(06 Marks)**

b. Solve the following system of equations by Gauss-Jordan method:
$x+y+z=9$, $2x+y-z=0$, $2x+5y+7z=52$ **(07 Marks)**

c. Using Rayleigh's power method find the largest eigen value and corresponding eigen vector of the matrix $A=\begin{pmatrix}2 & 0 & 1\\ 0 & 2 & 0\\ 1 & 0 & 2\end{pmatrix}$ with $X^{(0)}=(1,0,0)^T$ as the initial eigen vector carry out 5 iterations. **(07 Marks)**

OR

10 a. For what values of λ and μ the system of equations.
$x+y+z=6$, $x+2y+3z=10$, $x+2y+\lambda z=\mu$ may have
i) Unique solution ii) Infinite number of solutions iii) No solution. **(06 Marks)**

b. Reduce the matrix $A=\begin{pmatrix}-1 & 3\\ -2 & 4\end{pmatrix}$ into diagonal form. **(07 Marks)**

c. Solve the following system of equations by Gauss-Seidel method
$20x+y-2z=17$, $3x+20y-z=-18$, $2x-3y+20z=25$. Carry out 3 iterations. **(07 Marks)**

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CBCS SCHEME

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18CHE12

First Semester B.E. Degree Examination, Dec.2018/Jan.2019
Engineering Chemistry

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Define terms : (i) Free energy (ii) Entropy (iii) Cell potential. **(06 Marks)**

b. For the cell, Fe | Fe^{2+}(0.01M) || Ag^{+} (0.1M) | Ag, write the cell reaction and calculate the e.m.f of cell at 298 K, if standard potentials of Fe and Ag electrodes are – 0.44 V and +0.8V respectively. **(07 Marks)**

c. What are Secondary Batteries? Explain the construction and working of Nickel – metal hydride (Ni - MH) battery. Mention its applications. **(07 Marks)**

OR

2 a. Define Primary, Secondary and Reserve batteries with examples. **(06 Marks)**

b. What are concentration cells? The cell potential of copper concentration cell Cu | $CuSO_4$ (0.005M) || $CuSO_4$ (X) | Cu is 0.0295 V at 25°C. Calculate the value of X. **(06 Marks)**

c. Explain the construction and working of glass electrode giving its application in determination of pH of solution. **(08 Marks)**

Module-2

3 a. Define corrosion. Describe the electrochemical theory of corrosion taking rusting of iron as an example. **(07 Marks)**

b. Explain (i) Water line corrosion (ii) Pitting corrosion. **(06 Marks)**

c. What is electroless plating? Explain electroless plating of Nickel. **(07 Marks)**

OR

4 a. What is meant by metal finishing? Mention (any five) technological importance of metal finishing. **(06 Marks)**

b. Explain the process of (i) Galvanizing (ii) Anodising of Aℓ. **(07 Marks)**

c. What is electroplating? Explain electroplating of chromium. Mention why chromium cannot be used as anode. **(07 Marks)**

Module-3

5 a. Define calorific value of fuel. Explain the experimental determination of calorific value of solid / liquid fuel using Bomb calorimeter. **(08 Marks)**

b. What are fuel cells? Describe the construction and working of Solid Oxide Fuel Cell (SOFC). **(06 Marks)**

c. What are Solar cells? Explain the construction and working of photovoltaic (PV) cell. **(06 Marks)**

OR

6 a. Explain the preparation of solar grade Silicon by Union Carbide process. **(07 Marks)**

b. Write a note on (i) Power alcohol (ii) Unleaded petrol. **(06 Marks)**

c. 0.75 g of coal sample (Carbon 90%, H_2 5% and ash 5%) was subjected to combustion in Bomb calorimeter. Mass of water taken in calorimeter was 2.5 kg and the water equivalent of calorimeter is 0.65 kg. The rise in temperature was found to be 3.2°C. Calculate higher and lower calorific values of the sample. Latent heat of steam = 2457 kJ/kg and specific heat of water = 4.187 kJ/kg/°C. **(07 Marks)**

Module-4

7 a. What are the causes, effects and disposal methods of e-waste? **(07 Marks)**

b. What are the sources, effects and control of lead pollution? (Pb pollution). **(07 Marks)**

c. In a COD test, 30.2 cm^3 and 14.5 cm^3 of 0.05 N FAS solutions are required for a Blank and Sample titration respectively. The volume test sample used was 25 cm^3. Calculate the COD of the sample solution. **(06 Marks)**

OR

8 a. Explain the sources, effects and control of oxides of nitrogen. **(07 Marks)**

b. Explain softening of water by ion exchange method. **(07 Marks)**

c. Explain the Activated sludge treatment of sewage water. **(06 Marks)**

Module-5

9 a. Explain the theory, instrumentation and application of Atomic absorption spectroscopy. **(07 Marks)**

b. Explain the theory and instrumentation of potentiometry. **(07 Marks)**

c. Write a note on Fullerene. Mention its application. **(06 Marks)**

OR

10 a. What are Nanomaterials? Explain the synthesis of nanomaterials by precipitation method. **(07 Marks)**

b. Explain the synthesis of Nano materials by Sol-Gel technique. **(06 Marks)**

c. Explain the theory and instrumentation of conductometry. **(07 Marks)**

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CBCS SCHEME

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18CHE12/22

First/Second Semester B.E. Degree Examination, June/July 2019
Engineering Chemistry

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 single electrode potential? Derive Nernst's equation for single electrode potential. **(06 Marks)**

b. What are batteries? Demonstrate the construction and working of Ni-MH battery, mention its applications. **(07 Marks)**

c. What voltage will be generated by a cell that consists of an iron electrode immersed in 0.5M FeSO4 solution and a copper electrode immersed in 1M CuSO4 solution at 298 K. Given $E^{\circ}_{Fe} = -44$ V and $E^{\circ}_{Cu} = 0.34$ V. Write the cell representation and cell reactions. **(07 Marks)**

OR

2 a. What is Battery? Explain primary and secondary with examples. **(06 Marks)**

b. Describe the construction and working of Li-ion battery. Mention its applications. **(07 Marks)**

c. What are concentration cells? Emf of the cell Cd | $CdSO_4$ (XM) | | $CdSO_4$ (0.025M) | Cd at 28°C is 0.035 V. Find the concentration of CdSO4 at anode. Given R = 8.314 J/K/mol, F = 96500 C. **(07 Marks)**

Module-2

3 a. Discuss the following types of corrosion:
i) Differential metallic corrosion ii) Water line corrosion **(06 Marks)**

b. What is corrosion? Illustrate electrochemical theory of corrosion taking iron as an example. **(07 Marks)**

c. What is electroless plating? Outline the electroless plating of copper. **(07 Marks)**

OR

4 a. Explain the factors affecting the rate of corrosion:
i) Nature of corrosion product ii) Ratio of anodic to cathodic areas **(06 Marks)**

b. What is meant by metal finishing? Highlight any five technological importance of metal finishing. **(07 Marks)**

c. What is electroplating? Discuss the electroplating of chromium. **(07 Marks)**

Module-3

5 a. What are fuel cells? Describe the construction and working of Methanol-Oxygen fuel cell. **(06 Marks)**

b. Describe the experimental determination of calorific value of solid fuel using Bomb Calorimeter. **(07 Marks)**

c. 0.95 g of coal sample (C = 93%; H_2 = 6% and ash 1%) was subjected to combustion in Bomb calorimeter. Mass of water taken in the calorimeter was 2.6 kg and the water equivalent of calorimeter was 0.75 kg. The rise in temperature was found to be 3.2°C. Calculate the gross and net calorific values of the sample. Latent heat of steam = 2457 kJ/kg/°C and S = 4.187kJ/kg/°C. **(07 Marks)**

OR

6 a. Explain the preparation of solar grade silicon by union-carbide process. **(06 Marks)**

b. What are pv-cells? Illustrate the construction and working of a typical pv-cell. **(07 Marks)**

c. What is knocking? Explain the mechanisms of knocking. Mention its ill effects. **(07 Marks)**

Module-4

7 a. Outline the softening of water by ion-exchange method. **(06 Marks)**

b. What are the sources, effects and control of lead pollution? **(07 Marks)**

c. Define COD. In a COD test, 30.6 cm^3 and 15.5 cm^3 of 0.05N FAS solution are required for blank and sample titration respectively. The volume of the test sample used was 25 cm^3. Solve the COD of the water sample solution. **(07 Marks)**

OR

8 a. What is Desalination? Describe the process of reverse osmosis of water. **(06 Marks)**

b. What is boiler corrosion? Explain the boiler corrosion with CO_2, O_2 and $MgC\ell_2$. **(07 Marks)**

c. Define COD. Illustrate the determination of COD of waste water sample. **(07 Marks)**

Module-5

9 a. Describe the synthesis of nano-material by sol-gel technique. **(06 Marks)**

b. Discuss the theory and instrumentation of conductometry. **(07 Marks)**

c. Outline the theory, instrumentation and applications of colorimetry. **(07 Marks)**

OR

10 a. Explain size dependent properties of nano material:

i) Surface area

ii) Electrical

iii) Optical properties **(06 Marks)**

b. Write a note on fullerenes. Mention its properties and applications. **(07 Marks)**

c. What are nanomaterials? Explain the synthesis of nanomaterial by chemical vapour deposition method. **(07 Marks)**

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18PHY12/22

First/Second Semester B.E. Degree Examination, June/July 2019
Engineering Physics

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Define SHM and mention any two examples. Derive the differential equation for SHM using Hooke's law. **(07 Marks)**

b. With a neat diagram, explain the construction and working of Reddy's tube. Mention any three applications of shock waves. **(09 Marks)**

c. For a particle executing SHM, its acceleration is found to be 15cm/s^2 when it is at 3cm from its mean position. Calculate time period. **(04 Marks)**

OR

2 a. Explain the basics of conservation of mass, momentum and energy. **(06 Marks)**

b. What are forced oscillations? Derive the expressions for steady state amplitude and phase angle in case of forced oscillations. **(10 Marks)**

c. A 20g oscillator with natural angular frequency 10 rads^{-1} is vibrating in damping medium. The damping force is proportional to the velocity of the vibrator. Calculate the value of damping required for the oscillations to be critically damped. (Given damping coefficient is 0.17). **(04 Marks)**

Module-2

3 a. State and explain Hooke's law. Explain the nature of elasticity with the help of stress-strain diagram. **(08 Marks)**

b. Define bending moment. Derive the expression for bending moment interms of moment of inertia. **(08 Marks)**

c. Calculate the torque required to twist a wire of length 1.5m, radius 0.0425×10^{-2}m, through an angle $\left(\frac{\pi}{45}\right)$ radian, if the value of rigidity modulus of its material is 8.3×10^{10} N/m^2. **(04 Marks)**

OR

4 a. Define Poisson's ratio. Obtain the relation between y, n and σ where the symbols have their usual meaning. **(08 Marks)**

b. What are Torsional Oscillations? Mention any two applications of Torsional Pendulum. Derive the expression for couple per unit twist of a solid cylinder. **(08 Marks)**

c. Calculate the force required to produce an extension of 1mm in steel wire of length 2m and diameter 1mm (Young's modulus for steel $Y = 2 \times 10^{11}$ N/m^2). **(04 Marks)**

Module-3

5 a. State and prove Gauss Divergence Theorem. **(08 Marks)**

b. Define fractional Index change (Δ). Derive the expression for Numerical aperature and acceptance angle of an optical fiber. **(08 Marks)**

c. A circular coil of radius 10cm having 50 turns carries a current of 5A. Determine the magnetic field produced by the coil at a distance of 3cm from the centre. Also determine magnetic field produced by the coil at its centre. **(04 Marks)**

OR

6 a. Derive wave equation in terms of electric field using Maxwell's equations for free space. **(08 Marks)**

b. Describe different types of optical fibers with neat diagrams. Mention any two mechanisms involved in fiber loss. **(08 Marks)**

c. Calculate the V-number for a fiber of core-diameter 40μm and with refractive indices of 1.55 and 1.5 respectively for core and cladding. When the wavelength of the propagating wave is 1400nm. Also calculate the number of modes that the fiber can support for propagation. Assume that the fiber is in air. **(04 Marks)**

Module-4

7 a. Starting from Schrodinger's time independent wave equation, derive the expression for energy eigen value and eigen function for an electron in one dimensional potential well of infinite height. **(10 Marks)**

b. Explain the construction and working of CO_2 LASER with the help of energy level diagram. **(06 Marks)**

c. The average output power of laser source emitting a laser beam of wavelength 632.8nm. Find the number of photons emitted per second by the laser source. **(04 Marks)**

OR

8 a. Define the terms population inversion and meta-stable state. Derive the expression for energy density of radiation at equilibrium interms of Einstein's coefficients. **(10 Marks)**

b. Using Heisenberg's uncertainty principle, show that electrons do not reside inside the nucleus. **(06 Marks)**

c. An electron is bound in an 1-D potential well of infinite height and of width 1 Å. Calculate its energy values in the ground state and also in the first two excited states. **(04 Marks)**

Module-5

9 a. Define Fermi energy. Explain the variation of Fermi factor with temperature. **(08 Marks)**

b. What is Hall effect? Obtain the expression for Hall coefficient, and express Hall voltage interms of Hall coefficient. **(08 Marks)**

c. The dielectric constant of sulphur is 3.4. Assuming a cubic lattice for its structure, calculate the electronic polarizability of sulphur (given, density of sulphur = 2.07 g/cc and atomic weight = 32.07). **(04 Marks)**

OR

10 a. Mention the assumptions of Quantum free electron theory. Discuss two success of quantum free electron theory. **(08 Marks)**

b. Define the term internal field in case of solid dielectrics with one-dimensional equation. Explain polar and non-polar dielectrics with examples. **(08 Marks)**

c. The intrinsic charge carrier concentration of germanium is $2.4 \times 10^{19}/m^3$, calculate its resistivity if mobility of electrons and holes respectively are $0.39 m^2/vs$ and $0.19 m^2/vs$. **(04 Marks)**

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CBCS SCHEME

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18CPS13

First Semester B.E. Degree Examination, Dec.2018/Jan.2019
C Programming for Problem Solving

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 basic structure of a C program with example. **(10 Marks)**

b. Define a variable. Explain the rules for constructing variables in C language. **(04 Marks)**

c. Write a C program to compute simple interest. Draw the flowchart for the same. **(06 Marks)**

OR

2 a. Define data type. Explain primitive data types supported by C language with example. **(10 Marks)**

b. List all the operators used in C language and evaluate following expression.

i) $x = a - b/3 + c * 2 - 1$ when $a = 9$, $b = 12$, $c = 3$

ii) $10! = 10 \,||\, 5 < 4 \,\&\&\, 8$. **(04 Marks)**

c. Describe the various type computers. **(06 Marks)**

Module-2

3 a. Explain the formatted I/O functions of C language with syntax and example. **(04 Marks)**

b. Write a C program to implement commercial calculator using switch statement. **(06 Marks)**

c. Write the syntax of different branching statements and explain their working. **(10 Marks)**

OR

4 a. Differentiate between while loop and do-while loop. Explain with syntax and example. **(08 Marks)**

b. Write a program to find the sum of N natural numbers using for loop. **(04 Marks)**

c. Write a C program to plot Pascal's triangle. **(08 Marks)**

Module-3

5 a. Define array. Write the syntax for and with declaring and initializing 1D and 2D array with suitable example. **(10 Marks)**

b. Write a C program to find the transpose of a give matrix. **(10 Marks)**

OR

6 a. Define string. List out all string manipulation function. Explain any two with examples. **(10 Marks)**

b. Write a C program for [consider integer data] :
i) Bubble sort ii) Linear search. **(10 Marks)**

Module-4

7 a. What is a function? Explain the different type of functions based on parameter. **(10 Marks)**
b. Write a program to find the factorial of a given number using functions. **(14 Marks)**
c. Write a program to find GCD and LCM of two numbers using concept of functions. **(06 Marks)**

OR

8 a. Explain recursion and write a program to find n^{th} term of Fibonacci series. **(10 Marks)**
b. Give the scope and lifetime of following :
i) External variable ii) Static variable iii) Automatic variable
iv) Static variable iv) Register variable. **(10 Marks)**

Module-5

9 a. What is a structure? Explain the syntax of structure declaration in C with example. **(04 Marks)**
b. Write note on : i) Arrays within structures ii) arrays of structures. **(04 Marks)**
c. Implement structures to read, write and compute average marks and the students scoring above and below average marks for class of N students. **(12 Marks)**

OR

10 a. What is a pointer? Show how pointer variable is declared and initialized. **(05 Marks)**
b. Explain any two preprocessor directives in C. **(05 Marks)**
c. Write a C program to find sum and mean of all elements is an array using pointer. **(10 Marks)**

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CBCS SCHEME

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

18CPS13/23

First/Second Semester B.E. Degree Examination, June/July 2019
C Programming for Problem Solving

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. With a neat block diagram of computer, explain its components. **(10 Marks)**

b. Classify the following into input and output devices:
Monitors, visual display unit, Track balls, Bar code reader, Digital camera, Film recorder, Microfiche, OMR, Electronic Whiteboard, Plotters. **(05 Marks)**

c. Define the terms: Network, LAN, WAN, MAN and network topology. **(05 Marks)**

OR

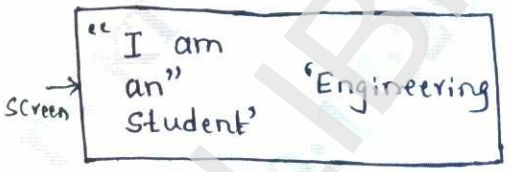
2 a. Write the basic structure of C program. Explain each section briefly with suitable example. **(09 Marks)**

b. Define operator. Explain any 6 operators with suitable example. **(07 Marks)**

c. State whether the following are valid identifiers or not: integer, float, I am, 123_AbC. **(04 Marks)**

Module-2

3 a. Define and write the classification of Input and Output statements in C. Write a C-program that prints the following output:



(06 Marks)

b. Define branching statements. Explain them with syntax and suitable example. **(10 Marks)**

c. Evaluate:

```
i = 1
L : if (i > 2)
  {
    printf ("Saturday");
    i = i + 1;
    goto L;
  }
  printf ("Sunday");
```

Explain your result briefly. **(04 Marks)**

OR

4 a. State the drawback of ladder if-else. Explain how do you resolve with suitable example. **(08 Marks)**

b. Write a C program to get the triangle of numbers as a result:

```
1
1 2
1 2 3
1 2 3 4
```

(06 Marks)

c. Write a C program to check whether given number is prime or not. **(06 Marks)**

Module-3

5 a. Define an array. Explain with suitable example how do you declare and initialize 1D array. **(10 Marks)**

b. Write a C program to search an element using linear and binary techniques. **(10 Marks)**

OR

6 a. Define a string. Explain any 4 string library functions with syntax and example. **(10 Marks)**

b. Write a C program to copy a string (combination of digits and alphabets) to another string (only alphabets). **(10 Marks)**

Module-4

7 a. Define a function. List and explain the categories of user defined functions. **(10 Marks)**

b. Write a C-program for evaluating the binomial coefficient using a function Factorial (n). **(10 Marks)**

OR

8 a. Define a recursion. Write a C recursive function for multiplying two integers where a function call is passed with two integers m and n. **(10 Marks)**

b. Differentiate: (i) User defined and built-in function (ii) Recursion and iteration **(10 Marks)**

Module-5

9 a. Define structures. Explain how do you declare, initialize and represent the memory for structure variable. **(10 Marks)**

b. Write a C program that accepts a structure variable as a parameters to a function from a function call. **(10 Marks)**

OR

10 a. Define pointers. Explain pass by value and pass by reference with C statements and an example. **(10 Marks)**

b. Define pre-processor directives. Write C program that finds the addition of two squared numbers, by defining macro for Square (x). **(10 Marks)**

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CBCS SCHEME

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

18ELE13

First Semester B.E. Degree Examination, Dec.2018/Jan.2019
Basic Electrical Engineering

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. State and explain Kirchhoff's laws as applied to an electric circuit. **(06 Marks)**

b. Given the network shown in Fig. Q1 (b), determine I_1, E, I_3 and I. If voltage across 9 Ω resistor is 27 V. **(08 Marks)**

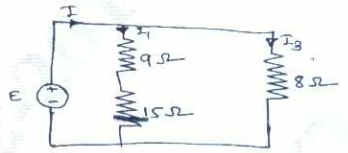

Fig. Q1 (b)

c. Derive the equation for root-mean-square value of an alternating current in terms of maximum value. **(06 Marks)**

OR

2 a. Define the (i) Frequency (ii) Form factor & (iii) Peak factor of sinusoidally varying voltage. **(06 Marks)**

b. The instantaneous values of two alternating voltages are represented respectively by $V_1 = 60\sin\theta$ volts and $V_2 = 40\sin\left(\theta - \frac{\pi}{3}\right)$ volts. Derive an expression for instantaneous value of : (i) the sum (ii) the difference of these voltages. **(08 Marks)**

c. For the network shown in Fig. Q2, calculate the power consumed by each resistor. **(06 Marks)**

Fig. Q2

Module-2

3 a. Show that voltage and current in pure resistive circuit are in phase and power consumed in the circuit is equal to product of rms voltage and current. The circuit is excited by the a.c. source. **(06 Marks)**

b. A resistance of 7 Ω is connected in series with a pure inductance of 31.8 mH and the circuit is connected to a 100 V, 50 Hz, sinusoidal supply. Calculate
(i) Circuit current (ii) Phase angle (iii) Power factor (iv) Power. **(08 Marks)**

c. Two wattmeters are used to measure power in a 3-phase balanced load. The wattmeter readings are 8.2 kW and 7.5 kW. Calculate (i) Total power (ii) Power factor and (iii) Total reactive power. **(06 Marks)**

OR

4 a. Deduce the relationship between the phase and the line voltages of a three phase star connected system. **(06 Marks)**

b. Three coils are connected in delta to a three phase, three wire, 400 V, 50 Hz supply and take a line current of 5 A at 0.8 p.f. lagging. Calculate the resistance and inductance of the coils. **(06 Marks)**

c. A coil having a resistance of 20 Ω and inductance of 0.0382 H, is connected in parallel with a circuit consisting of a 150 μF capacitor in series with 10 Ω resistor. The arrangement is connected to a 230 V, 50 Hz supply. Determine current in each branch. Also find total supply current. **(08 Marks)**

Module-3

5 a. Explain the construction of a single phase transformer. **(06 Marks)**

b. A 50 KVA single phase transformer has primary and secondary turns of 300 and 20 respectively. The primary winding is connected to a 2200 V, 50 Hz supply. Calculate (i) No load secondary voltage (ii) approximate values of the primary and secondary currents on full load (iii) Maximum value of flux density. **(06 Marks)**

c. With neat diagram, explain plate earthing. **(08 Marks)**

OR

6 a. Derive E.M.F equation of single phase transformer. **(06 Marks)**

b. With neat circuit and truth table, explain three way control of lamp. **(06 Marks)**

c. A 400 KVA transformer has a core loss of 2 kW and maximum efficiency at 0.8 p.f. occurs when the load is 240 kW. Calculate (i) The maximum efficiency at unity power factor. (ii) the efficiency on full load at 0.71 power factor. **(08 Marks)**

Module-4

7 a. Draw a labeled diagram of the cross section of a d.c. generator. What are the essential functions of the field coils, armature, commutator and brushes? **(08 Marks)**

b. A four-pole armature of d.c. generator has 624 lap-connected conductors and is driven at 1200 rpm. Calculate the useful flux per pole required to generate an E.M.F of 250 V. **(06 Marks)**

c. A four pole motor is fed at 440 V and takes an armature current of 50 A. The resistance of the armature circuit is 0.28 ohm. The armature winding is wave-connected with 888 conductors and useful flux per pole is 0.023 wb. Calculate back emf and speed. **(06 Marks)**

OR

8 a. Obtain from first principles an expression for torque developed in d.c. motor. **(06 Marks)**

b. Explain characteristics of d.c. shunt motor. **(06 Marks)**

c. A shunt generator running at 500 rpm delivers 50 kW at 200 V. The armature and field resistances are 0.02 and 40 Ω respectively. Calculate generated E.M.F if brush drop of 1 V per brush. **(08 Marks)**

Module-5

9 a. By means of a diagram, describe the main parts of synchronous generator with their functions. **(08 Marks)**

b. The stator of a 3-phase, 8 pole, 750 rpm alternator has 72 slots, each of which contains 10 conductors. Calculate the rms value of the emf per phase if flux per pole is 0.1 wb sinusoidally distributed. Assume full pitch coils and winding distribution factor of 0.96. **(06 Marks)**

c. A 4-pole, 3300 V, 50 Hz induction motor runs at rated frequency and voltage. The frequency of the rotor currents is 2.5 Hz. Find slip and running speed. **(06 Marks)**

OR

10 a. Deduce an expression for the frequency of rotor current in an induction motor. **(06 Marks)**

b. A 4-pole, 3-phase induction motor operates from a supply whose frequency is 50 Hz. Calculate,

(i) Synchronous speed.
(ii) The speed of the rotor when the slip is 0.04.
(iii) The frequency of the rotor current when the slip is 0.03.
(iv) The frequency of the rotor current at standstill. **(08 Marks)**

c. Derive e.m.f equation for synchronous generator. **(06 Marks)**

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CBCS SCHEME

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18ELE13/23

First/Second Semester B.E. Degree Examination, June/July 2019
Basic Electrical Engineering

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. State and explain Kirchoff's laws. **(08 Marks)**

b. Define form factor and peak factor. Obtain their values for a sinusoid voltage. **(06 Marks)**

c. A circuit consists of two parallel resistors having resistances of 20Ω and 30Ω respectively connected in series with a 15Ω resistor. If current through 15Ω resistor is 3A, find,
i) Current through the branches.
ii) Voltage across whole circuit
iii) Power consumed by 20Ω and 15Ω resistors. **(06 Marks)**

OR

2 a. Define average and rms value of a sinusoid. Also derive the respective expressions. **(08 Marks)**

b. Find the potential difference between XY for the network shown below Fig.Q2(b). **(06 Marks)**

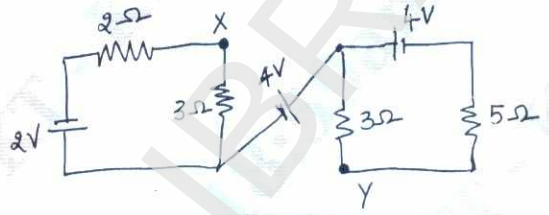

Fig.Q.2(b)

c. State Ohm's Law. Mention its limitations. **(06 Marks)**

Module-2

3 a. Obtain the behaviour of voltage, current and power in a pure inductor. Connected to single phase ac supply. **(08 Marks)**

b. Show that, 3ϕ power can be measured using only two wattmeters for a balanced star connected load. **(06 Marks)**

c. A 3ϕ load of 3 equal impedances are connected in delta across a balanced 400V, 50Hz, 3 ϕ supply which takes a line current of 10A at a power factor of 0.7 lagging. Calculate: i) Phase current ii) Total power in W iii) Power in VA iv) Power in VAR. **(06 Marks)**

OR

4 a. Obtain expressions for line and phase relationship of voltage, current and power in a 3ϕ star connected system. **(08 Marks)**

b. An alternating voltage of (160 + j120)V is applied to a circuit and the current is given by (6 + j8)A. Find the values of circuit elements by assuming f = 50Hz. Calculate the power factor of the circuit and power consumed by the circuit. **(06 Marks)**

c. A balanced 3ϕ star connected system draws power from 440V supply. The two Wattmeters connected indicate W_1 = 5kW and W_2 = 1.2kW. Calculate power, power factor and current in the circuit. **(06 Marks)**

Module-3

5 a. Explain electrical shock, its causes and precautions to be taken to prevent them. **(08 Marks)**

b. Discuss about various types of losses in a transformer. **(06 Marks)**

c. A 250KVA; 11,000/415 Volts, 50Hz, 1ϕ transformer has 80 turns on the secondary. Calculate:

i) Rated primary and secondary currents

ii) Number of primary turns

iii) Maximum value of flux in the core

iv) Voltage induced/turn on secondary. **(06 Marks)**

OR

6 a. A 500kVA, 1ϕ transformer has an efficiency of 92% at full load, upf and at half the full load, 0.9pf. Determine its efficiency at 80% of the full load and 0.95pf. **(08 Marks)**

b. Discuss about necessity of earthing, with a neat diagram explain pipe earthing. **(06 Marks)**

c. Write short notes on: i) Fuse ii) MCB. **(06 Marks)**

Module-4

7 a. With a neat sketch, explain construction of a DC machine. **(08 Marks)**

b. A 4 pole, 230V, DC series, wave connected armature with 1254 conductors, with flux per pole of 22mWb, takes 50A for motoring. The armature and series field coil resistances are 0.3Ω and 0.2Ω respectively. Calculate the speed and torque developed in Watts. **(06 Marks)**

c. Brief on characteristics of a DC shunt motor with neat diagrams. **(06 Marks)**

OR

8 a. Define back emf and derive torque equations for a DC motor. **(08 Marks)**

b. A shunt generator has 4 poles, lap wound armature having 24 slots with 10 conductors/slot. If the flux/pole is 0.04Wb. and the speed is 1500rpm, calculate the emf generated in the armature. What would be the generated emf if the winding is wave connected? **(06 Marks)**

c. Give the classification of DC generators with their equivalent circuit diagrams. **(06 Marks)**

Module-5

9 a. Explain the principle of working of an induction motor. **(08 Marks)**

b. List the advantages of rotating field over rotating armature. **(06 Marks)**

c. A 3ϕ, 6-pole, star connected alternator, revolves at 1000rpm. The stator has 90 slots and 8 conductors/slot. The flux per pole is 0.05 Wb. Calculate the voltage generated by the machine if winding factor is 0.96. **(06 Marks)**

OR

10 a. Explain the working principle of an alternator. Also derive its emf equation. **(08 Marks)**

b. Compare squirrel cage and slip ring types of rotors of an Induction motor. **(06 Marks)**

c. An 8 pole alternator runs at 750 rpm, supplies power to a 4 pole induction motor. The frequency of the rotor is 1.5Hz. What is the speed of the motor? **(06 Marks)**

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CBCS SCHEME

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18CIV14

First Semester B.E. Degree Examination, Dec.2018/Jan.2019
Elements of Civil Engineering and Mechanics

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Briefly explain the scopes of branches:
i) Transportation Engineering
ii) Geotechnical Engineering. **(10 Marks)**

b. What are the effects of infrastructural facilities on socio-economic development of a country? **(05 Marks)**

c. What is the role of a civil engineer in infrastructural development of a country? **(05 Marks)**

OR

2 a. Explain briefly,
i) Law of physical independency of forces.
ii) Law of superposition of forces. **(06 Marks)**

b. State and prove Varignon's law of moments. **(06 Marks)**

c. Find the moment of 100kN force acting on a rigid body ABC as shown in Fig.Q.2(c), about point A. **(08 Marks)**

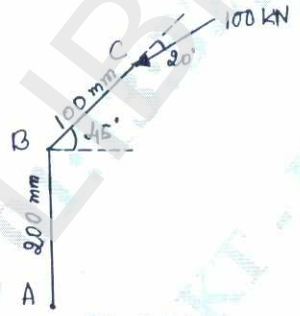

Fig.Q.2(c)

Module-2

3 a. Define Free Body Diagram, with the help of at least two examples. What is the importance of drawing a F.B.D (Free Body Diagram) in Engineering Mechanics? **(05 Marks)**

b. What are the laws of dry friction? **(05 Marks)**

c. A mass of 580 kg resting on a rough inclined plane is acted upon by a 6000N force as shown in Fig.Q.3(c). If the coefficient of friction is 0.25 at point of contact, check whether the body slides up or down. **(10 Marks)**

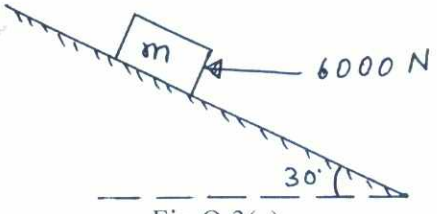

Fig.Q.3(c)

OR

4 a. State and prove Lami's theorem. **(04 Marks)**

b. Find the reactions developed at contact points A, B and C supporting two identical rollers each of weight 1000N as shown in Fig.Q.4(b) **(06 Marks)**

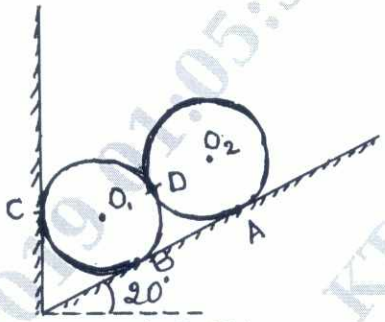

Fig.Q.4(b)

c. A ladder 4m long and weighing 200N is placed against a vertical wall and rests on a horizontal floor making an angle 60° with the floor. The coefficient of friction between ladder and floor is 0.3 and that between ladder and wall is 0.2. The ladder in addition to its own weight supports a person weighing 600N at a distance of 3m from the floor along the ladder. Calculate the minimum force 'P' to be applied horizontally at the floor level on the ladder to keep it in equilibrium. **(10 Marks)**

Module-3

5 a. Determine the support reactions in case of a simply supported beam shown in Fig.Q.5(a). **(06 Marks)**

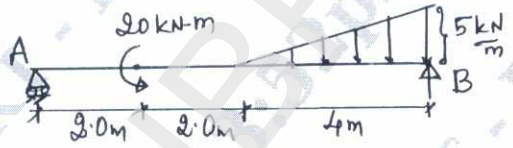

Fig.Q.5(a)

b. Analyze the truss shown in Fig.Q5(b) to find member forces in member BC, CH and GH by method of sections. **(14 Marks)**

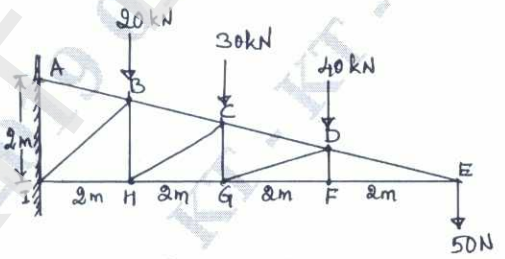

Fig.Q5(b)

OR

6 a. Differentiate statically determinate and indeterminate structures with examples for each. **(06 Marks)**

b. Determine member forces in the truss shown in Fig.Q.6(b). **(14 Marks)**

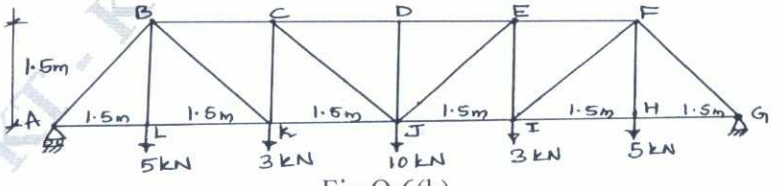

Fig.Q.6(b)

Module-4

7 a. Derive the expression for centroid of a semi-circle from first principle. **(06 Marks)**

b. Determine the centroid of shaded area of composite shown in Fig.Q.7(b) with respect to origin 'O'. **(14 Marks)**

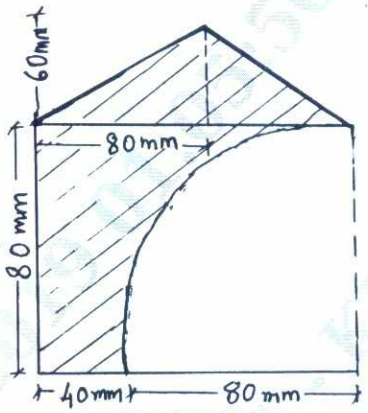

Fig.Q.7(b)

OR

8 a. State and prove Parallel axis theorem. **(06 Marks)**

b. Find radius of gyration of plane lamina about its horizontal centroidal axis shown in Fig.Q.8(b). **(14 Marks)**

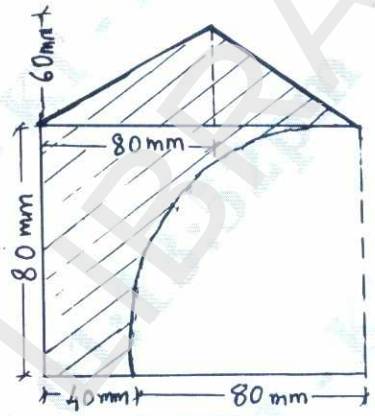

Fig.Q.8(b)

Module-5

9 a. Two cars P and Q accelerates from a standing start. The acceleration of P is 1.3 m/s^2 and that of Q is 1.6 m/s^2. If Q was originally 6m behind P, how long it takes to overtake P? **(10 Marks)**

b. A stone 'A' is dropped from top of a tower 50m heigh. At the same time another stone 'B' is thrown up from the foot of the tower with the velocity of 25m/s. At what distance from top and after how much time the two stones will cross each other. **(10 Marks)**

OR

10 a. State D' Alembert's principle and write significance of it structural dynamics. **(06 Marks)**

b. A cricket ball is thrown by a fielder in the ground from a height of 3m at an angle of 40° with the horizontal. The velocity with which the ball is thrown is 30m/s. The ball hits the wicket at a height of 0.3m from ground. Determine the distance of the fielder from the wicket when the ball is thrown. **(14 Marks)**

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CBCS SCHEME

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18CIV14/24

First/Second Semester B.E. Degree Examination, June/July 2019
Elements of Civil Engineering and Mechanics

Time: 3 hrs. Max. Marks: 100

Note: **1.** ***Answer any FIVE full questions, choosing ONE full question from each module.***
2. ***Assume missing data suitably.***

Module-1

1 a. Briefly explain the role of civil engineers in the infrastructure development of the country. **(06 Marks)**

b. Explain briefly the scope of civil engineering in (i) structural engineering (ii) geotechnical engineering. **(08 Marks)**

c. A 200 N vertical force is applied to the end of the lever which is attached to a shaft as shown in Fig.Q1(c). Determine: (i) Moment of force about 'O' (ii) Horizontal force applied at 'A' which creates same moment about 'O' (iii) Minimum force which creates the same moment about 'O'.

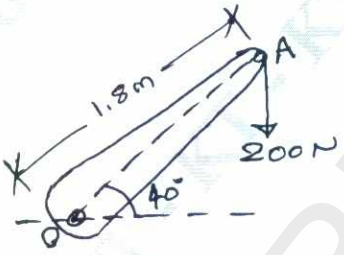

Fig.Q1(c) **(06 Marks)**

OR

2 a. Determine the resultant of the force system acting on a body as shown in the Fig.Q2(a) with respect to point 'O'.

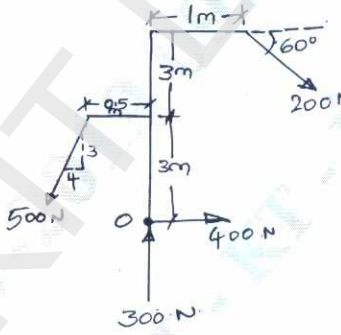

Fig.Q2(a) **(08 Marks)**

b. State and prove Varignon's theorem of moments. **(06 Marks)**

c. 2 kN force is the resultant of a system of forces acting along positive y-axis as shown in Fig.Q2(c). Determine the value of F and θ.

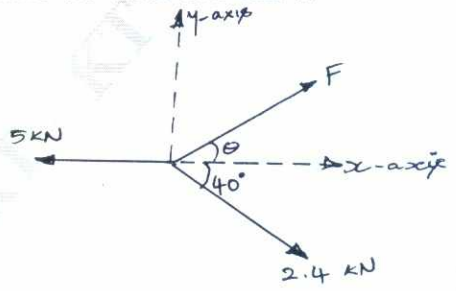

Fig.Q2(c) **(06 Marks)**

Module-2

3 a. What is meant by equilibrium? State the conditions of static equilibrium for both coplanar concurrent and non-concurrent force system. **(05 Marks)**

b. State and prove Lami's theorem. **(05 Marks)**

c. Determine the force 'P' required to cause the motion of the blocks to impend. Take the weight of A as 90 N and weight of B as 50 N. Take coefficient of friction for all contact surfaces as 0.30 as shown in Fig.Q3(c) and consider the pulley being frictionless.

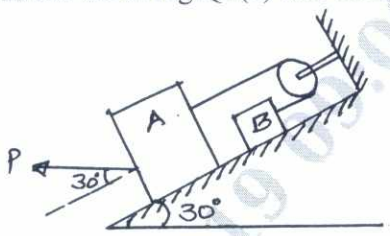

Fig.Q3(c) **(10 Marks)**

OR

4 a. Briefly explain: (i) Angle of friction (ii) Cone of friction. **(04 Marks)**

b. Calculate the tension in the strings. Also calculate 'θ' in Fig.Q4(b).

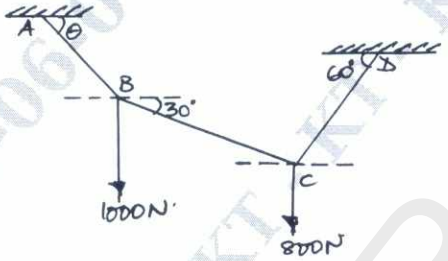

Fig.Q4(b) **(10 Marks)**

c. Prove that angle of repose is equal to angle of friction. **(06 Marks)**

Module-3

5 a. What are the different types of beams? How do you differentiate them? **(06 Marks)**

b. List the steps followed in the analysis of truss by method of joints. **(06 Marks)**

c. Find the length 'X' so that the reactions at both the supports are equal for the beam as shown in Fig.Q5(c).

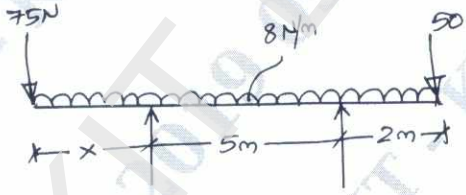

Fig.Q5(c) **(08 Marks)**

OR

6 a. List the assumptions made in the analysis of trusses. **(04 Marks)**

b. What are the different types of supports and mark their reaction lines. **(06 Marks)**

c. Analyze the frame and tabulate the member forces for the frame shown in Fig.Q6(c).

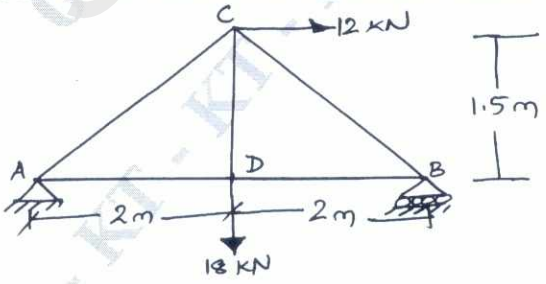

Fig.Q6(c) **(10 Marks)**

Module-4

7 a. Derive an expression for the centroid of a right angles triangle. **(06 Marks)**

b. State and prove perpendicular axis theorem. **(04 Marks)**

c. Determine the polar radius of gyration for the built up section as shown in Fig.Q7(c).

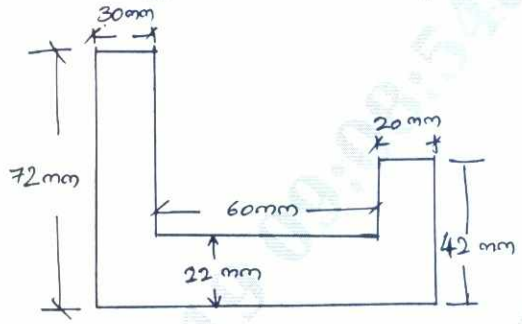

Fig.Q7(c) **(10 Marks)**

OR

8 a. Determine the moment of inertia of a semicircle with respect to its diameter line and hence determine the moment of inertia with respect to its centroidal axis parallel to the diameter line. Also write the expression for moment of inertia with respect to a line perpendicular to the diameter passing through the centroid. **(12 Marks)**

b. Determine the position of the controid for the Fig.Q8(b).

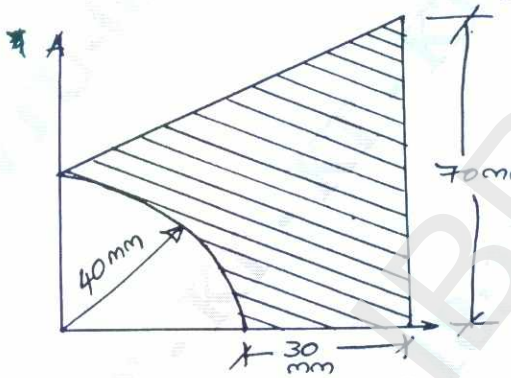

Fig.Q8(b) **(08 Marks)**

Module-5

9 a. Define displacement, distance travelled, velocity and acceleration. Mention their respective S.I. units. **(04 Marks)**

b. Acceleration of a particle is given by $a = -2$ m/s^2. If $v = 8$ m/s and $x = 0$ when $t = 0$. Determine: (i) velocity (ii) total distance travelled when $t = 6$ sec. **(08 Marks)**

c. State D'Alembert's principle and mention its application in plane motion. **(08 Marks)**

OR

10 a. Derive the equations of motion. **(08 Marks)**

b. What is superelevation? Why is it necessary? **(04 Marks)**

c. An aircraft moving horizontally at a speed of 300 km/hr at an elevation of 2.5 km targets a point on the ground and releases a bomb. If the bomb has to hit the target, determine the horizontal distance at which the aircraft should release the bomb. Also calculate the velocity and direction with which the bomb will hit the target. **(08 Marks)**

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CBCS SCHEME

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18ELN14/24

First/Second Semester B.E. Degree Examination, June/July 2019
Basic Electronics

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 semiconductor diode? Explain the different equivalent circuits of diode. **(06 Marks)**

b. Explain the working of photodiode. **(05 Marks)**

c. With a neat circuit diagram and waveforms, explain the working of full wave bridge rectifier. Also derive V_{dc} and V_{rms} values for full wave rectifier. **(09 Marks)**

OR

2 a. A full wave rectifier uses 2 diodes having internal resistance of 20Ω each. The transformer rms secondary voltage from centre to each end is 50V. Find I_m, I_{dc}, I_{rms} and V_{dc} if the load is 980Ω **(06 Marks)**

b. Explain the functional block diagram of 78×× series voltage regulator. **(06 Marks)**

c. Explain how Zener diode can be used as a voltage regulator. Give detail mathematical analysis. **(08 Marks)**

Module-2

3 a. With a neat circuit diagram explain the working of CMOS inverter. **(06 Marks)**

b. For a N-channel JFFT if I_{DSS} = 8mA and V_p = −5V, calculate I_D at V_{as} = −3V and V_{as} at I_D = 3mA. **(05 Marks)**

c. Explain the construction, working and characteristics of N- channel JFET. **(09 Marks)**

OR

4 a. Explain the working of SCR using two transistor model. **(06 Marks)**

b. What is commutation in SCR? Explain two types of commutation. **(05 Marks)**

c. Explain the construction, working and characteristics of enhancement type MOSFET. **(09 Marks)**

Module-3

5 a. What is Op – AMP? List the characteristics of ideal Op – Amp. **(06 Marks)**

b. Explain how Op – Amp can be used as i) Integrator ii) Voltage Follower. **(08 Marks)**

c. Find the output of the Op – Amp circuit shown in Fig Q5(c) below

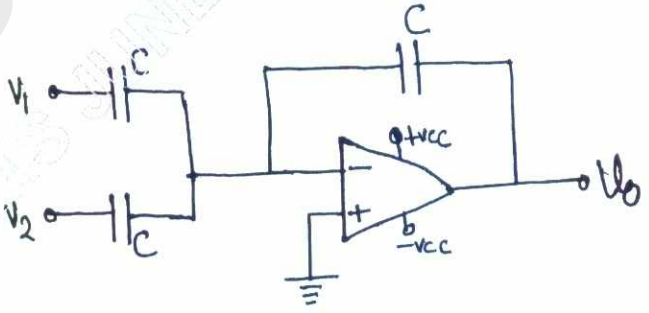

Fig Q5(c) **(06 Marks)**

OR

6 a. Explain the following terms with respect to Op – Amp
i) CMRR ii) Slew Rate iii) Output offset voltage iv) Supply voltage Rejection Ratio. **(08 Marks)**

b. Design on Op – Amp circuit to obtain output expression as $V_0 = -[V_1 + 3V_2 + 5V_3]$. **(06 Marks)**

c. Explain how Op – Amp can be used as differentiator. **(06 Marks)**

Module-4

7 a. What is feedback amplifier? What are the properties of negative feedback amplifier? **(06 Marks)**

b. Explain how transistor can be used as an amplifier. **(06 Marks)**

c. With a neat circuit diagram and waveforms, explain the working of 555 timers as an oscillator. **(08 Marks)**

OR

8 a. Draw the block diagram of voltage series negative feedback amplifier and derive the expression for its voltage gain. **(06 Marks)**

b. Design a RC phase shift oscillator for a frequency of 1KHz. Draw the circuit diagram with designed values. **(06 Marks)**

c. With a neat circuit diagram, explain the working of Wein Bridge oscillator. **(08 Marks)**

Module-5

9 a. Perform the following :
i) Convert $(925.75)_{10}$ to base – 2 and base - 16
ii) Subtract from $(11011.11)_2$ from $(10101.11)_2$ using 2's compliment method. **(06 Marks)**

b. With a block diagram explain the working of 3-bit asynchronous counter. **(06 Marks)**

c. What is multiplexer? Implement 8:1 multiplexer using basic gates. **(08 Marks)**

OR

10 a. Simplify $S = A \oplus B \oplus C$ and realize using basic gates. **(05 Marks)**

b. What is flip-flop? Explain the operation of master slave JK flip flop. **(06 Marks)**

c. Implement full adder using two half adders. **(04 Marks)**

d. With a block diagram, explain the working of basic communication system. **(05 Marks)**

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CBCS SCHEME

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18ME15

First Semester B.E. Degree Examination, Dec.2018/Jan.2019
Elements of Mechanical Engineering

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Use of Thermodynamic data hand book is permitted.

Module-1

1 a. Explain briefly the principle of conversion of solar energy directly into electrical energy in a solar cell. **(10 Marks)**

b. Write a note on wind energy and its conversion. **(10 Marks)**

OR

2 a. Explain I - law of thermodynamics. List the similarities and dissimilarities between work and heat. **(10 Marks)**

b. Define the following term in relation to steam:
(i) Dryness fraction
(ii) Latent heat
(iii) Degree of super heat
(iv) Saturation temperature **(10 Marks)**

Module-2

3 a. Differentiate between water tube boiler and fire tube boiler. **(04 Marks)**

b. List the boiler mountings and accessories and also mention their uses. **(06 Marks)**

c. With neat sketch explain the working of Babcock and Wilcox boiler. **(10 Marks)**

OR

4 a. With a neat sketch explain the working of Pelton Wheel. **(10 Marks)**

b. With a neat sketch explain the working of a Reciprocating pump, state the advantages and uses. **(10 Marks)**

Module-3

5 a. Differentiate between Two-stroke and Four stroke engine. **(04 Marks)**

b. Explain with neat sketch construction and working of 4-stroke diesel engine with the help of theoretical P-V diagram. **(10 Marks)**

c. A four stroke single cylinder Diesel engine piston diameter 250 mm and stroke 400 mm. The mean effective pressure is 4-bar and speed is 500 rpm. Diameter of the brake drum is 1000mm. The effective brake load is 400 N. Find IP, BP and FP. **(06 Marks)**

OR

6 a. What are the properties of good refrigerant? **(04 Marks)**

b. Explain with neat sketch working principle of vapour compression refrigeration. **(10 Marks)**

c. Explain the following :
(i) Refrigeration effect
(ii) Ton of refrigeration
(iii) COP. **(06 Marks)**

Module-4

7 a. Write a note on application of ferrous and non-ferrous alloys. **(06 Marks)**

b. Define composite material. State the advantages and applications of composite material. **(05 Marks)**

c. Differentiate between Soldering, Brazing and Welding. **(09 Marks)**

OR

8 a. Differentiate between Open and Crossed belt drive. **(06 Marks)**

b. Enumerate the advantages and disadvantages of gear drive over belt drive. **(06 Marks)**

c. Derive an equation for length of belt in open belt drive. **(08 Marks)**

Module-5

9 a. Explain the following operation on lathe with suitable sketches:
(i) Turning (ii) Knurling (iii) Facing (iv) Thread cutting **(10 Marks)**

b. Explain the following operation on milling machine with suitable sketches:
(i) Form milling (ii) Angular milling (iii) Gang milling **(10 Marks)**

OR

10 a. Differentiate between open loop and closed loop systems. **(06 Marks)**

b. Define robot. Write down industrial applications of robot. **(04 Marks)**

c. Explain the components of CNC with a block diagram. **(10 Marks)**

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CBCS SCHEME

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18ME15/25

First/Second Semester B.E. Degree Examination, June/July 2019
Elements of Mechanical Engineering

Time: 3 hrs. Max. Marks: 100

Note: *1. Answer FIVE full questions, choosing one full question from each module.*
2. Use of Steam table is permitted.

Module-1

1 a. List and explain any one source of energy. **(06 Marks)**

b. Explain briefly : (i) Global Warming (ii) Ozone depletion **(06 Marks)**

c. Find the enthalpy of 1 kg of steam at 12 bar when,
(i) Steam is dry saturated.
(ii) Steam is 22% wet and
(iii) Super heated to 250°C
Assume the specific heat of the super heated steam as 2.25 KJ/kgK. **(08 Marks)**

OR

2 a. Explain briefly any two of the following:
(i) Zeroth law of thermodynamics.
(ii) First law of thermodynamics.
(iii) Second law of thermodynamics. **(06 Marks)**

b. Explain formation of steam with the help of Temperature-Enthalpy (T-h) diagram. **(08 Marks)**

c. Find the specific volume and enthalpy of 1 kg of steam at 0.8 MPa.
(i) When the dryness fraction is 0.9.
(ii) When the steam is super heated to a temperature of 300°C.
The specific heat of the super heated steam is 2.25 KJ/kgK. **(06 Marks)**

Module-2

3 a. With a neat labeled diagram, explain working of Babcock and Wilcox boiler. **(08 Marks)**

b. Define prime movers and explain working of Pelton wheel turbine with a neat sketch. **(12 Marks)**

OR

4 a. Define (i) Boiler Mountings. (ii) Boiler Accessories.
Explain functions of any five mountings or accessories. **(12 Marks)**

b. What are hydraulic pumps? Explain centrifugal pump with a neat sketch. **(08 Marks)**

Module-3

5 a. Explain 4-s petrol engines with P-V diagram. **(10 Marks)**

b. Give comparisons between petrol and diesel engines. **(05 Marks)**

c. A four stroke IC engine running at 450 rpm has a bore diameter of 100 mm and stroke length 120 mm. The indicated diagram details are,
(i) Area of the diagram 4 cm^2
(ii) Length of the indicated diagram 6.5 cm
(iii) Spring value of the spring used 10 bar/cm.
Calculate the indicated power of the engine. **(05 Marks)**

OR

6 a. Explain with a neat sketch working of vapour compression Refrigerator. **(08 Marks)**

b. Define : (i) Ton of Refrigerator (ii) COP (iii) Ice making capacity **(06 Marks)**

c. List commonly used refrigerants and mention the applications of air conditioners. **(06 Marks)**

Module-4

7 a. Classify ferrous and non ferrous metals. **(05 Marks)**

b. Define composites, explain any two of the following : (i) Piezoelectric materials. (ii) Shape memory alloys (iii) Optical fibre glass. **(05 Marks)**

c. Classify metal joining processes, explain TIG (Tungsten Inert Gas) Welding with a neat sketch. **(10 Marks)**

OR

8 a. Derive an expression for length of the belt in open belt drive. **(10 Marks)**

b. Mention advantages and disadvantages of V-Belt drive. **(05 Marks)**

c. List different types of gears and explain any one with its advantages. **(05 Marks)**

Module-5

9 a. Explain briefly the following:

(i) Turning
(ii) Facing
(iii) Thread cutting **(06 Marks)**

b. Explain the working of horizontal milling machine with a simple line diagram. **(08 Marks)**

c. Explain briefly:

(i) Angular milling.
(ii) Gang milling.
(iii) Plane milling. **(06 Marks)**

OR

10 a. Explain briefly the components of a CNC machine with a neat block diagram. **(08 Marks)**

b. Define Robots and mention its general applications. **(07 Marks)**

c. Write short note on:
CNC Machining Center or Turning Center. **(05 Marks)**

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18MAT21

Second Semester B.E. Degree Examination, June/July 2019
Advanced Calculus and Numerical Methods

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. If $\vec{F} = \nabla(x^3 + y^3 + z^3 - 3xyz)$, find div $\vec{F}$ and curl $\vec{F}$. **(06 Marks)**

b. Find the angle between the surfaces $x^2 + y^2 + z^2 = 9$ and $z = x^2 + y^2 - 3$ at the point $(2, -1, 2)$. **(07 Marks)**

c. Find the value of a, b, c such that $\vec{F} = (axy + bz^3)\hat{i} + (3x^2 - cz)\hat{j} + (3xz^2 - y)\hat{k}$ is irrotational, also find the scalar potential ϕ such that $\vec{F} = \nabla\phi$. **(07 Marks)**

OR

2 a. Find the total work done in moving a particle in the force field $\vec{F} = 3xy\hat{i} - 5z\hat{j} + 10x\hat{k}$ along the curve $x = t^2+1$, $y = 2t^2$, $z = t^3$ from $t = 1$ to $t = 2$. **(06 Marks)**

b. Using Green's theorem, evaluate $\int_C (xy + y^2)dx + x^2dy$, where C is bounded by $y = x$ and $y = x^2$. **(07 Marks)**

c. Using Divergence theorem, evaluate $\int_S \vec{F}\,ds$, where $\vec{F} = (x^2 - yz)\hat{i} + (y^2 - xz)\hat{j} + (z^2 - xy)\hat{k}$ taken over the rectangular parallelepiped $0 \le x \le a$, $0 \le y \le b$, $0 \le z \le c$. **(07 Marks)**

Module-2

3 a. Solve $(D^2 - 3D + 2)y = 2x^2 + \sin 2x$. **(06 Marks)**

b. Solve $(D^2 + 1)y = \sec x$ by the method of variation of parameter. **(07 Marks)**

c. Solve $x^2y'' - 4xy' + 6y = \cos(2\log x)$ **(07 Marks)**

OR

4 a. Solve $(D^2 - 4D + 4)y = e^{2x} + \sin x$. **(06 Marks)**

b. Solve $(x+1)^2y'' + (x+1)y' + y = 2\sin[\log_e(x+1)]$ **(07 Marks)**

c. The current i and the charge q in a series containing an inductance L, capacitance C, emf E, satisfy the differential equation $L\frac{d^2q}{dt^2} + \frac{q}{C} = E$, Express q and i interms of 't' given that L, C, E are constants and the value of i and q are both zero initially. **(07 Marks)**

Module-3

5 a. Form the partial differential equation by elimination of arbitrary function from $\phi(x + y + z,\ x^2 + y^2 + z^2) = 0$ **(06 Marks)**

b. Solve $\frac{\partial^3 z}{\partial x^2 \partial y} = \cos(2x + 3y)$ **(07 Marks)**

c. Derive one dimensional heat equation in the standard form as $\frac{\partial U}{\partial t} = C^2\frac{\partial^2 U}{\partial x^2}$. **(07 Marks)**

OR

6 a. Solve $\frac{\partial^2 z}{\partial x^2} + z = 0$ such that $z = e^y$ where $x = 0$ and $\frac{\partial z}{\partial x} = 1$ when $x = 0$. **(06 Marks)**

b. Solve $(mz - ny)\frac{\partial z}{\partial x} + (nx - \ell z)\frac{\partial z}{\partial y} = \ell y - mx$ **(07 Marks)**

c. Find all possible solutions of one dimensional wave equation $\frac{\partial^2 U}{\partial t^2} = C^2 \frac{\partial^2 U}{\partial x^2}$ using the method of separation of variables. **(07 Marks)**

Module-4

7 a. Discuss the nature of the series $\sum_{n=1}^{\infty} \frac{(n+1)^n}{n^{n+1}} x^n$. **(06 Marks)**

b. With usual notation prove that $J_{1/2}(x) = \sqrt{\frac{2}{\pi x}} \sin x$ **(07 Marks)**

c. If $x^3 + 2x^2 - x + 1 = aP_3 + bP_2\, cP_1 + dP_0$, find a, b, c and d using Legendre's polynomial. **(07 Marks)**

OR

8 a. Discuss the nature of the series

$$\frac{x}{1.2} + \frac{x^2}{3.4} + \frac{x^3}{3.4} + \ldots\ldots\ldots$$ **(06 Marks)**

b. Obtain the series solution of Legendre's differential equation in terms of $P_n(x)$

$(1 - x^2)y'' - 2xy' + n(n+1)y = 0$ **(07 Marks)**

c. Express $x^4 - 3x^2 + x$ interms of Legendre's polynomial. **(07 Marks)**

Module-5

9 a. Find the real root of the equation $x\sin x + \cos x = 0$ near $x = \pi$ using Newton-Raphson method. Carry out 3 iterations. **(06 Marks)**

b. From the following data, find the number of students who have obtained (i) less than 45 marks (ii) between 40 and 45 marks.

Marks	30 – 40	40 – 50	50 – 60	60 – 70	70 - 80
No. of Students	31	42	51	35	31

(07 Marks)

c. Evaluate $\int_0^6 \frac{1}{1+x^2} dx$ using Simpson's $\frac{3}{8}^{th}$ rule by taking 7 ordinates. **(07 Marks)**

OR

10 a. Find the real root of the equation $x \log_{10} x = 1.2$ which lies between 2 and 3 using Regula-Falsi method. **(06 Marks)**

b. Using Lagrange's interpolation formula, find y at x = 4, for the given data:

x	0	1	2	5
y	2	3	12	147

(07 Marks)

c. Evaluate $\int_4^{5.2} \log_e x\, dx$ using Weddle's rule by taking six equal parts. **(07 Marks)**

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Question Paper Version : A

First Semester B.E. Degree Examination, June/July 2019
Technical English – I
(COMMON TO ALL BRANCHES)

Time: 3 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.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

1. Which of the following skills has the largest share in communication time in schools/colleges?
a) Listening b) Reading c) Writing d) Spelling

2. Body language is also known as
a) Leakage b) Physical communication c) Overflow d) Noise

3. Which of these is a communication skill?
a) talking clearly b) Looking bored c) Laughing d) Running

4. Which of these is a Intrapersonal Communication barrier?
a) Lack of knowledge b) Reading c) Listening d) Writing

5. Which of the following can become a type of written communication?
a) Pictures b) Meetings c) Letters d) Rules

Identify the Parts of Speech of the underlined words from the given options : (Q.No.6 to Q.No 9)

6. "Unfortunately , they haven't been paying on time <u>recently</u>.
a) Pronoun b) Adjective c) Verb d) Adverb

7. "His colour is <u>very</u> dark"
a) Verb b) Noun c) Preposition d) Adverb

8. "<u>Hunger</u> made me steal"
a) Abstract noun b) Common noun c) Proper noun d) Collective noun

9. "India is a great Country".
a) Proper noun b) Verb c) Common noun d) Adverb

10. The Plural of the word "Furniture" is
a) Furnitures b) Furniture c) Furnitureses d) More Furnitures

11. Which of the following noun is not used as plural?
a) Mankind b) Sisters c) Wages d) Goods

12. We are _______ of the same Profession.
a) Brothers b) Sons c) Brethren d) Cousins

13. Have you heard of ________?
a) His b) Him c) He d) You

14. It was ______ that gave the first blow.
a) Me b) Mine c) I d) his

15. ______ of the players was given a medal
a) Every b) Each c) their d) whom

16. Your description was _______
a) More perfect b) Most perfect c) Perfect d) Perfectest

17. Your performance gave me ________ satisfaction
a) Full b) Fuller c) Fullest d) Most full

18. He is the _______ member of the club
a) Eldest b) Oldest c) Elder d) None

19. He comes from a ______ village than mine.
a) Further b) Furthest c) Farther d) Father

20. 'Later' denotes Time, 'Latter' denotes.
a) Number b) Position c) Measure d) Close – to.

21. The cattle ______ grazing.
a) was b) were c) is d) has

22. Either of the two boys ______ welcome
a) are b) were c) is d) have

23. It was ______ hot to drink.
a) Too b) Very c) Much d) Most

24. I got up at 6 a.m and it was _____ dark
a) Yet b) Untill c) Still d) till

25. The experiments are not _____ over
a) still b) of course c) yet d) Quite.

26. If, "Commonsense" is objective, then "Common sense" is _____
a) an adverb b) a noun c) a verb d) An adjective

27. The teacher ordered me to write ____ ink
a) with b) in c) on d) over

28. The Lion sprang _____ the cow to kill it
a) upon b) on c) over d) above

29. Sheela resembles _____ her mother
a) with b) on
c) from d) No preposition needed

30. I have been waiting for you _____ the last three days
a) since b) for c) over d) from

31. China lies _____ the north of India
a) To b) for c) above d) on

32. Translate this passage from English _____Kannada
a) in b) into c) to d) from

33. Let us discuss _____ 'Female literacy in India".
a) on b) about
c) of d) No preposition is needed

34. It is hardly ten years _____ the reform was introduced
a) on b) over c) since d) about

35. It was because of _____ you, that he was able to see his plans_____
a) of, on b) to , with c) of, through d) to, of

36. He kept ____ telling me to give _____ smoking
a) on, up b) at, on c) on, to d) up, on

37. Can you bring me _____ books?
a) few b) a few c) the few d) little

38. I can't write this letter now as I have other matters to attend _____
a) At b) To c) for d) on

39. With your help, I could tide ____ my difficulties
a) away b) off c) against d) over

40. Entry _____this auditorium is _____ ticket
a) to, by b) in , through c) to , of d) into, by

41. My elder brother is _____ M.A, where as I am only a B.A.
a) a b) on c) the d) that

42. _____ USA is the richest country in the World
a) A b) An c) The d) That

43. He is _____ European but his wife is_____ Indian.
a) a , an b) an , a c) a , the d) An, the

44. _____ Honesty is one of the choicest gift.
a) A b) An c) The d) No article is needed

45. He is _____ ablest man in town.
a) the b) a c) an d) None

46. I _____ learning English grammar for many days
a) have b) has c) have been d) has been

47. _____ your failures known to all?
a) Are b) is c) Has d) was

48. I _____ him very well
a) Knowing b) know c) known d) knows

49. He told me that he _____ solve all the sums
a) can b) could c) were d) did

50. She_____ playing table tennis since morning
a) has been b) has c) have d) have been

51. She _____ not come here unless I invite her
a) shall b) will c) has d) has been

52. We eat so that we _____ live.
a) should b) would c) may d) Dare

Choose the appropriate Question Tag, to complete the following sentences (Q.No.53 to Q.No.57)

53. 'You can't take exams lightly'.
a) can you? b) could you? c) can't you? d) couldn't you?

54. "Mother is so happy"
a) was she? b) isn't she? c) can't she? d) did she?

55. "We played well"
a) Didn't we? b) Did we? c) weren't we? d) don't we?

56. 'The question was not so easy'
a) was it? b) is it? c) wasn't it? d) isn't it?

57. 'Let us start the meeting'
a) can't we? b) shall we? c) are we? d) didn't we?

Choose the correct synonym for the following words (Q.No.58 to Q.No.62)

58. Assent :
a) Consent b) Present c) Content d) Contempt

59. Bias :
a) Proportion b) Prejudice c) Probe d) Peace

60. Comprehend :
a) Understand b) Smart c) Good d) Disagree

61. Deceit :
a) ailment b) Fraud c) Dear d) Crime

62. Care :
a) need b) Seed c) heed d) bleed

Choose the appropriate Antonym for the following words: (Q.No.63 to Q.No.67)

63. Abundance :
a) earth b) dearth c) birth d) death

64. Discount :
a) differ b) premium c) few d) retreat

65. Enthusiaism :
a) Zeal b) indifference c) more d) differ

66. Postpone :
a) Prepone b) Advance c) Often d) Before

67. Numerous :
a) some b) few c) all d) many

Choose the suitable Homophones for the following words: (Q.No.68 to Q.No.72)

68. Air :
a) Heir b) ear c) dear d) hire

69. Bare :
a) Bale b) Bear c) Brake d) Hair

70. Cast :
a) Caste b) Chaste c) taste d) waste

71. Die :
a) Due b) Dye c) Day d) Dice

72. Gate :
a) Guilt b) Gilt c) Gait d) Mate

Select the correct Prefix or Suffix from the Options given to complete the gap : (Q.No. 73 to Q.No.79)

73. _____ dextrous
a) Anit b) Ambi c) Ante d) An

74. _____bolism
a) meta b) theta c) mega d) Hypo

75. _____adventure
a) dis b) mis c) un d) mal

76. _____ dontics
a) ortho b) nano c) Demo d) out

77. Block _____
a) aid b) ade c) ail d) ant

78. Colon _____
a) tion b) ship c) isation d) ment

79. Fear _____
a) ship b) less c) ous d) ent

Select the correct spelling for each of these commonly misspelled words (Q.No.80 to Q.No.84)

80. a) abandon b) abondan c) abandan d) abanden

81. a) beleive b) believe c) belive d) believ

82. a) Calendar b) Calender c) Calandar d) Calaner

83. a) deceive b) decieve c) deceve d) decive

84. a) Grammore b) Gramor c) Grammar d) Gramer

Select the missing silent letters from the options given. Check the spelling carefully. (Q.No.85 to Q.No.89)

85. Crum : _____
a) d b) b c) t d) s

86. Su _____tle
a) b b) t c) d d) p

87. Han _____ Kerchief
a) p b) t c) b d) d

88. Co _____nac
a) b b) c c) g d) d

89. Clou _____
a) gh b) ht c) ch d) hg

Choose the correct pair of words from the given options. (Q.No.90 to Q.No.91)

90. Ankle :
a) angle b) uncle c) banker d) bangle

91. Shoes :
a) Choose b) Chase c) Chide d) base

92. The Pronunciation of Definite article 'The' before a consonant is ____
a) thee b) th-uh c) th-hu d) th-eh

93. Which of the following is an adjective derived from adjective root?
a) Active b) Single c) Golden d) Boyish

94. Jack and Peter dislike _____
a) One another b) each other c) each one d) each another

95. _____ I hear foot steps
a) Bravo ! b) Oops ! c) Hark ! d) Fie !

96. Cautious in speech or action is called_____
a) Discreet b) Discrete c) Degree d) Decree

97. I have learnt these _____ by heart
a) Poetry b) Poetries c) Poems d) Poem

98. Which of the following word has /i :/ sound?
a) Car b) Seat c) Fit d) books

99. Which of the following word has /x/ sound
a) Car b) bad c) said d) dot

100. Which of the following word has /t/ sound
a) father b) hut c) love d) beat

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Question Paper Version : A

Second Semester B.E Degree Examination, June / July 2019
Technical English – II
(COMMON TO ALL BRANCHES)

Time: 3 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.

Choose the appropriate verb that agrees with the subject: (Q.No.1 to Q.No.4)

1. The adventures of Tom Sawyer _____ written by Twain.
   a) were b) was being c) was d) are

2. All seats in the bus _____ numbers.
   a) have b) has c) had d) having

3. Justice, as well as mercy _____ it.
   a) allow b) allowed c) allowes d) will allow

4. Time and tide _____ for none.
   a) waits b) wait c) waiting d) waited

Choose the correct pronoun that agrees with the noun: (Q.No.5 to Q.No.7)

5. The committee has appended a note to _____ report.
   a) their b) its c) them d) there

6. The Jury were at sixes and sevens _____ could not decide a thing.
   a) It b) They c) Their d) He

7. He was the man _____ they thought was dead.
   a) of b) who c) whom d) none

Fill in the blanks with appropriate adjectives : (Q.No.8 to Q.No.10)

8. The flowers smell _____.
   a) Sweetly b) Sweeter c) Sweet d) Sweetest

9. Patricia is the _____ of the Vicar's family.
   a) oldest b) Eldest c) Elder d) Older

10. She has _____ dresses.
    a) many b) much c) more d) low

Choose the appropriate adverbs: (Q.No.11 to Q.No.13)

11. The king treated the beggar _____.
    a) royal b) royally c) more royally d) most royally

12. I went through the books _____.
    a) quickly b) quick c) quicker d) quickest

13. _____ you work the better you achieve.
    a) Harder b) The harder c) Hard d) Smart

Choose the right form of the verb: (Q.No.14 to Q.No.16)

14. Prakhyathi _____ lunch and thanked me.
    a) eat b) eating c) ate d) had eaten

15. This exit _____ only when there is fire.
    a) is used b) is to used c) was used d) was to be used

16. I some times _____ to the cinema.
    a) to go b) go c) goes d) will go

Select the correct tense form of the verb: (Q.No.17 to Q.No.18)

17. One of the houses _____ to Swathi.
    a) is belonging b) belong c) belongs d) to belong

18. Praveen _____ to college everyday.
    a) comes b) come c) is coming d) came

Choose the correct article from the given options: (Q.No.19 to Q.No.21)

19. _____ oranges are grown in Nagpur.
    a) a b) an c) the d) no article

20. _____ Island Express is very popular.
    a) The b) An c) A d) no article

21. He is _____ honest man and deserves a reward.
    a) an b) a c) the d) no article

Select the correct preposition from the given option to complete the gap : (Q.No.22 to Q.No.25)

22. We need the entire payment _____ advance.
a) for b) with c) in d) on

23. They arrived in this city thirty years _____.
a) ago b) by c) before d) later

24. Don't you know, _____ holidays all schools remain closed?
a) between b) during c) of d) on

25. She has been working here _____ 10 years.
a) for b) since c) from d) of

Choose the right conjunction from the given options to complete the gap : (Q.No.26 to Q.No.28)

26. We stayed at home _____ watched a movie.
a) and b) but c) so d) or

27. _____ she speaks often seldom. She says motivational words.
a) Even b) After c) As long as d) Although

28. I was wexed _____ you did that.
a) if b) when c) till d) because

Select the correct meaning of the underlined idiom : (Q.No.29 to Q.No.31)

29. This is the time <u>to take stock</u> of the whole situation.
a) to update inventory b) to assess
c) to collect stock d) to verify stock

30. As she is only girl in a big family, she is <u>all in all</u> in her home.
a) every person b) particularly same in all c) call all at once d) most important

31. He gave his <u>cold shoulder</u> at my bad times.
a) Shiver b) cold meat c) to ignore d) to support

Choose the appropriate phrases from the given options to fill in the blanks : (Q.No.32 to Q.No.33)

32. The union has _____ the strike.
a) called of b) called off c) called in d) called into

33. Don't _____ the milk.
a) boil up b) boil over c) boil in d) boil off

Select the correct gender of the underlined words : (Q.No.34 to Q.No.36)

34. Two <u>cocks</u> were made to fight with each other.
a) male b) female c) neuter d) common

35. An elephant was trumpeting in the jungle.
a) male b) female c) neuter d) common

36. The doctor called for an ambulance.
a) common b) neuter c) female d) male

Choose the correct word which indicates the right option to complete the gap: (Q.No.37 to Q.No.38)

37. I saw herd of _____.
a) cattle b) cattles c) catle d) cattl

38. Kashmir Valley has many beautiful _____.
a) Scenary b) Scenaries c) seens d) seen

39. Which of the following sentences does not contain misplaced modifier?
a) Dyed purple, Bella enjoyes the blanket. b) Pulled apart, Chris ate the kettle corn bag.
b) Jumping up, the kitten caught the treat. d) Eating the kettle corn, the bag crunched.

40. Choose the best option in the following sets of sentences:
a) At his arrival, the spectators greeted the superstar.
b) On his arrival, the spectators greeted the superstar.
c) With his arrival, the spectators greeted the superstar.
d) In his arrival, the spectators greeted the super star.

41. The sentence that introduces the main idea in a paragraph is called _____.
a) The introduction sentence b) The exclusive sentence
c) The topic sentence d) The first sentence.

42. Which of the following is not a kind of paragraph?
a) Narrative b) Persuasive c) Descriptive d) Expansion

43. The following is not a punctuation mark:
a) Ellipsis (...) b) Parenthesis (( )) c) Star (*) d) Colon (:)

44. Choose the appropriate punctuation marks required in the following sentences : Wow _____ That's amazing _____.
a) ? . b) ! ! c) ! . d) ! ?

45. The following form of condensation involves the writing to highlight the purpose and scope of work.
a) Synopsis b) Abstract c) Paraphrase d) Summary

46. What is the order of writing an effective precis?
P → Read and comprehend R → Prepare a skeleton of main ideas
Q → Edit and revise S → Prepare the first draft
a) PQRS b) SRQP c) RSQP d) PRSQ

47. Which type of essay often reviews a book, movie or topic?
a) Argumentative Essay b) Analytical Essay c) Descriptive Essay d) Philosophical Essay

48. An Essay can be divided into _____ distinct parts.
a) 2 b) 4 c) 5 d) 3

49. Which of the following sentences is / are example/examples for errors due to Indianism.
a) What is the time on your watch? b) Are you going in the train?
c) His father is an excellent fellow d) All of these

50. 'My father does cloth selling business'. It is being an example for error due to Indianism, can be corrected as,
a) My father deals in cloth b) My father sells clothes
c) Cloth selling is my father's business d) All the these

51. The characteristics of Technical Report are,
a) Clarity and Preciseness b) Coherence and Objectivity
c) Both (a) and (b) d) Neither (a) nor (b)

52. 'Annual report' is an example for,
a) Periodic report b) Informal report c) Formal report d) Group report

53. The following is not a format of technical report writing?
a) Printed forms b) Memo format c) Letter format d) None of these

Choose the pair of word / phrase from the options given that best expresses a similar relationship to that of the given pair : (Q.No.54 to Q.No.56)

54. Sport : Soccer
a) fish : water b) stadium : game c) volleyball : net d) literature : sonnet

55. Patient : Hospital
a) Teacher : School b) Pilot : Aeroplane c) Litigant : Court d) Priest : Church

56. Skyscraper : Shack
a) Elevator : Escalator b) Village : Town
c) Jetliner : Biplane d) Chimney : Fireplace

Choose the correct form of Active/Passive voice of the following sentences: (Q.No.57 to Q.No.61)

57. The king gave him a reward.
a) A reward was given by him to the king b) He was given a reward by the king.
c) He was given the reward by a king d) He was given by a king the reward.

58. Do you understand what I mean?
a) What I mean is understood by you? b) Was what I mean understood by you?
c) What I mean .. is that understood by you? d) Is what I mean understood by you?

59. Before festivals the shops are thronged with men, women and children making various purchases.
a) During festivals people throng the shops.
b) The shops are thronged by people making purchases.
c) Men, women and children make purchases during festivals.
d) Men, women and children throng the shops before festivals making various purchases.

60. Don't laugh at me.
a) Let me be not laughed at.
b) I am laughed at.
c) Let me be laughed at.
d) Let me be not laughed

61. Has a dog ever bitten you?
a) You are bitten by a dog.
b) Have you ever been bitten by a dog?
c) Has a dog ever bites you?
d) Have you ever being bitten by a dog?

Select the correct form of Reported Speech of the following sentences: (Q.No.62 to Q.No.67)

62. He said to the interviewer "Could you please repeat the question?"
a) He requested to the interviewer if he could repeat the question.
b) He requested the interviewer to please repeat the question.
c) He requested the interviewer to repeat the question.
d) He requested the interviewer if he could repeat the question.

63. He said to them, "Be quiet and listen to my words".
a) He urged them to be quite and listen to his words.
b) He urged them and said be quiet and listen to his words.
c) He urged they should be quite and listen to his words.
d) He said you should be quite and listen to his words.

64. David said to Anna, "Mona will leave for her native place tomorrow."
a) David told Anna that Mona will leave for her native place tomorrow.
b) David told Anna that Mona left for her native place the next day.
c) David told Anna that Mona would be leaving for her native place the next day.
d) David told Anna that Mona would leave for her native place the next day.

65. He said, "I cannot help you now as I am in trouble."
a) He said, that he cannot help him now as he was in trouble.
b) He said, that he could not help him then as he was in trouble.
c) He said, that he would not help him as he was in trouble.
d) He said, that he could not help you then as he was himself in trouble.

66. Fathima said to Geetha, "Could you lend me a pen?"
a) Fathima asked to Geetha if she can lend her a pen.
b) Fathima asked Geetha if she could lend me a pen.
c) Fathima asked Geetha whether she could lend her a pen.
d) Fathima questioned Geetha whether she can lend her a pen.

67. "Are you alone, my son?" said a soft voice behind me.
a) A soft voice from my back asked if I was alone.
b) A soft voice from behind me asked whether you are alone.
c) A soft voice asked behind me if you are alone.
d) A soft voice behind me asked if I was alone.

Choose the part of the sentences in which grammatical error is noticed : (Q.No.68 to Q.No.71)

68. One of the members/expressed doubt if/the minister was an atheist.
a) One of the members b) expressed doubt if c) the minister was an atheist d) No error

69. We discussed about the problem/so thoroughly/on the even of the examination.
a) We discussed about the problem b) So thoroughly
c) On the even of the examination d) No error.

70. If suppose/you take my car today,/will you return it tomorrow?
a) If suppose b) you take my car today c) will you return it tomorrow d) No error.

71. My friend is/more better than/my sister in studies.
a) My friend is b) more better than c) my sister in studies d) No error

Choose the correct word to fill the gaps in the following : (Q.No.72 to Q.No.73)

72. When Mr. Jones died, we went to pay our (1) to him. The (2) house was in the row opposite (3). However, it took us longer to reach there as the street was filled with many visitors (4) had come there.

(1)	(A) regard	(B) regards	(C) respects	(D) respect
(2)	(A) Jones'	(B) Jones	(C) Jone's	(D) John's
(3)	(A) our	(B) ours	(C) us	(D) we
(4)	(A) who	(B) whom	(C) that	(D) which

a) D, A, B, A b) D, A, C, A c) A, B, C, A d) A, A, B, A

73. If you really want to grow in life, you need to be (1) reader. It is in this sense that (2) helps you in every possible way. It is easily said than done however. It is so because we all want to tell others how we feel but there aren't many who really think that listening to others or reading what others have written can give them a good outlet. That is why, more of us rather than listening and reading, are keen to speak. We must watch out for this habit of ours. Being (3) is certainly an asset but without content you are more likely to sound like a worthless (4) man.

(1)	A) Vicarious	B) voracious	C) avaricious	D) Pernicious
(2)	A) Soliloquy	B) Solicitude	C) solitude	D) lassitude
(3)	A) garrulous	B) eloquent	C) loquacious	D) capricious
(4)	A) Voracious	B) Careless	C) placating	D) garrulous

a) A, C, B, D b) B, C, A, D c) C, A, D, D d) B, C, B, D

74. What is the position of 'details of the recipient' in a formal letter?
a) Left hand side b) Top right side c) Below the salutation d) Can be placed anywhere

75. How do you end the main body of a formal letter?
a) By telling the recipient what he should be doing next.
b) By talking about the weather in your city.
c) By talking about the weather in the recipient's city.
d) By expressing your love for the recipient.

76. Which of the following elements is not included in 'standard elements' in a business letter?
a) Letter head and date b) Salutation c) Signature block d) Subject line

77. How should a business letter look like?
a) It has to be professional and effective by using the templates.
b) It should be written using easy words so that an illiterate also can understand.
c) It has be written similar to informal letter.
d) It should be written brief and short.

78. The following element should not be included in letter of application.
a) Mentioning the position for which you wish to apply.
b) The information that is included in your resume.
c) Emphasize the qualification that the prospective employer would like to seek in you.
d) Let the employers know how you came to know about the vacancy in their company.

79. Why do we write letter of application?
a) To request the employer to do a favour by giving a job.
b) To let the employers know of our address so that they can send offer letter.
c) To let the employer know of our writing skills.
d) To provide the true information of ours and to mention why and how we are the suitable candidates for the job.

80. The cover letter is written,
a) to introduce oneself as the suitable candidate for the job.
b) to give biographical details of the candidate.
c) to try for the job.
d) to let the employer know how good candidate is in different languages.

81. What is the standard font size in a resume?
a) 10 – 12 b) 8 – 10 c) 12 – 14 d) 6 – 8

82. Curriculum Vitae (CV) is used by _____
a) Experienced professionals b) Freshers
c) Trainers d) Candidates with 1 or 2 years of experience

83. Which of the following is not an essential information in resume?
a) Name & Address b) Educational qualification c) Job objective d) Family background

84. The following is not an essential element in Email header.
a) The e-address of the sender b) BCC (Blind Carbon Copy)
c) The e-address of the receiver d) Greetings

85. Email stands for,
a) Electronic mail b) Electric mail c) Emergency mail d) Essential mail

86. Identify the false statement about Blog writing.
a) Blogs can be in any language b) A person can't maintain multiple blogs
c) Blog is a personal/online diary d) Blog is also called weblog.

87. Identify the factor which is not important while planning a presentation.
a) Objective of the presentation b) Audience
c) Structure of the presentation d) Minimum education qualification for presenter

88. A typical presentation would have the following part in its structure.
a) Main body b) Conclusion c) Questions and responses d) All of these

89. Which of the following statements about facing an interview is false?
a) Greet people with a smile and firm hand shake. b) Make good eye contact.
c) Express your weaknesses more positively.
d) Don't make an attempt to read the body language of the interviewers.

90. Which of the following should be adapted at an interview?
a) Using hand gestures
b) Crossing hands together
c) Fiercely nodding head continuously
d) Expressing the disagreement in too much negative way.

91. Which of the following is not an element of Group discussion?
a) Group size b) Subject knowledge
c) Evaluation of candidates d) Unnecessary Argument.

92. Group discussion is _____
a) a form of group communication b) an example for formal communication
c) oral in nature d) meant only for conducting interviews

93. Non-verbal communication is not concerned with _____
a) Kinesics b) Messages c) Proxemics d) Paralinguistic

94. _____ is an example for non-verbal communication media.
a) time b) bulletin board c) space d) a and c

95. Which of the following is not a tip on non-verbal communication for Group Discussion?
a) Being formally and neatly dressed b) Staying alert all the time
c) Keep on fiddling with pen d) Maintaining a pleasing disposition

96. Non-verbal communication does not involve _____.
a) Silence b) gestures c) posture d) words

97. What are the types of Interpersonal communication skills?
a) Direct & Indirect b) Verbal & Ordinary c) Direct & Passive d) Verbal & Non Verbal

98. Which of the following is not a barrier to inter-personal communication?
a) wrong assumption b) limited vocabulary c) emotional outburst d) poor listening skills

99. Identify the false statement about inter-personal communication.
a) Inter-personal communication is sharing of information among people.
b) It can be formal or informal communication
c) It is a communication between human beings and animals
d) It is helpful to give immediate feedback and to clarify.

100. Which of the following is not a tip to improve inter personal communication skills?
a) Think before you speak
b) Don't be defensive or attacking
c) Be open to receive feedback
d) Be dominate over others

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