R_13 Code : 13ME1001

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, MAY 2018

I B.Tech.

ENGINEERING GRAPHICS
(Common to CE & ME)

Time : 3 hours Max. Marks : 60

Answer FIVE Questions, Choosing ONE Question from each section
All Questions carry equal marks
* * *

SECTION - I

1 A circular base of ϕ 25 mm rolls on another fixed disc of ϕ = 60 mm, with external contact, for one complete revolution of the rolling circle. Draw the curve traced out by a point P, on the rim of the rolling disc, which is situated diametrically opposite to the point of contact in the starting position. Also draw a tangent and normal at any point on the curve

2 Construct a parabola, when the distance of the focus from the directrix is 60 mm. Also draw a tangent and normal to this parabola at a point 50 mm from directrix

SECTION - II

3 A line LM 70 mm long has its end L 10 mm above HP and 15 mm infront of VP. The top view and front view measures 60 mm and 40 mm respectively. Draw the projections of the line and determine its inclination with HP and VP

4 A line CD 100 mm long is inclined at an angle 30o with H.P. and at angles 40° with V.P. Its midpoint is in V.P. and 15 mm above the H.P. Draw its projections, if its end C is in first quadrant and end D in the third quadrant.

SECTION - III

5 A regular hexagon of side 35 mm has a corner in the HP. Its surface is inclined at

45° to HP. The top view of the diagnol through the corner in HP makes an angle of 60° with VP. Draw its projections

6 Draw the top and front views of a rectangular pyramid of sides of base 40x 50 mm and height 70 mm when it lies on one of its larger triangular faces on HP. The longer edge of the base of the triangular face lying on HP is inclined at 60^0 to VP in the top view with the apex of the pyramid being nearer to VP.

SECTION - IV

7 A pentagonal pyramid, side of base 30 mm and height 60 mm, stands with its base on H.P and an edge of the base is parallel to V.P. It is cut by a plane perpendicular to V.P, inclined at 40^0 to H.P and passing through a point on the axis, 32 m above the base. Draw the sectional top view and develop the lateral surface of the truncated pyramid.

8 A cone base 75 mm diameter and axis 100 mm long, has its base on the HP. A section plane parallel to one of the end generators and perpendicular to the HP cuts the cone intersecting the axis at a point 75 mm from the base. Draw the sectional Top View and the true shape of the section

SECTION - V

9 The Pictorial view of an object is shown in Fig.1. Draw the a) Elevation in the direction of arrow and b) Plan.

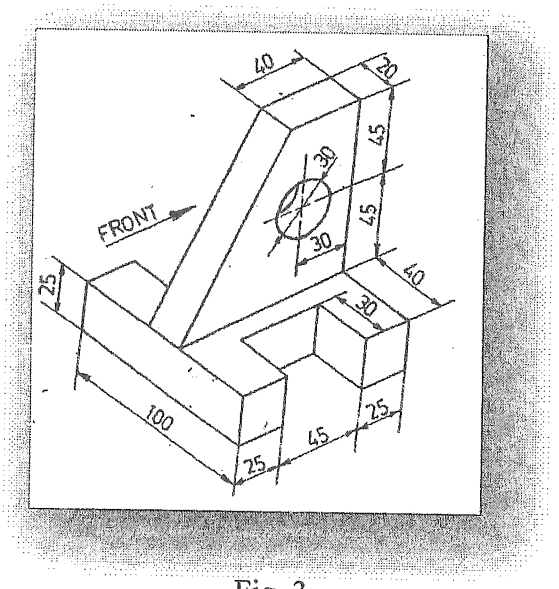


Fig. 3

10 Draw the isometric projection of the model of steps, two views of which are shown in the Fig.2.

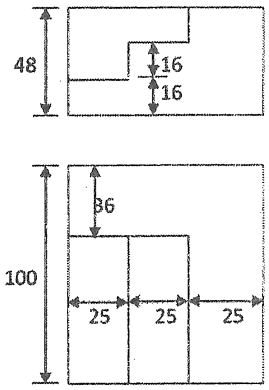


Fig.2.

R_13

Code : 13EE1001

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, MAY 2018

I B.Tech.

BASIC ELECTRICAL SCIENCE

(Common to EEE, ECE & CSE)

Time : 3Hrs

Max. Marks : 60

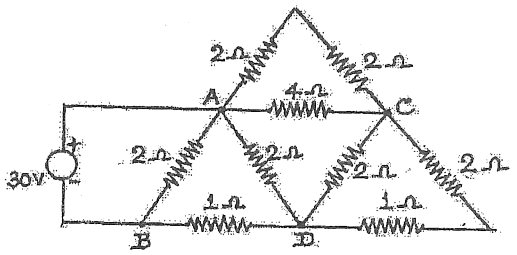
*Answer **FIVE** Questions, Choosing **ONE** Question from each section*
All Questions carry equal marks

* * *

SECTION - I

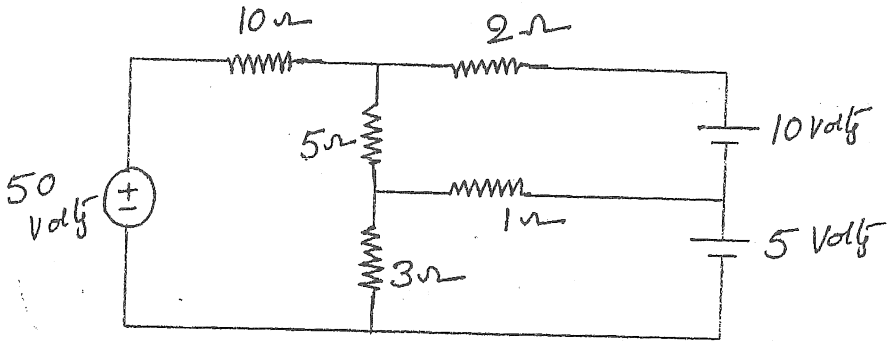
1 a) State and explain KCL and KVL?

b) Determine the current delivered by the source in the circuit shown in figure below.



2 a) Explain the concept of self & mutual inductance.

b) Write the mesh current equations in the circuit shown in fig. below and determine the currents.



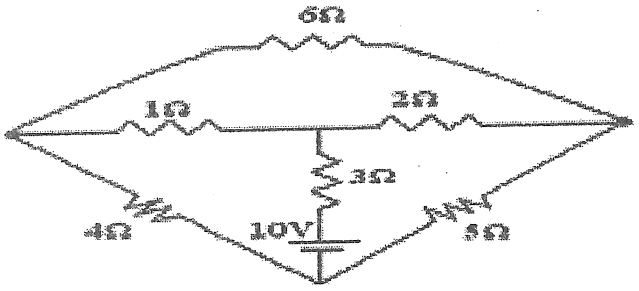
SECTION - II

3 a) Define average value. Derive the expression for avg. value of a sinusoidal wave form.

b) A series RLC circuit R=8 ohm, L=3.5 Henry, C=800 μF. If the supply voltage is 220V and frequency is 60 Hz, Find (i) Drop across each circuit element, (ii) Total resistive, Inductive and capacitive drops, (iii) Real Power (iv) Power Factor of the circuit.

4 a) Define and explain the following terms.
i)Graph ii)Tree of a graph iii)Subgraph iv)Planar and Nonplanar graph V)Cutset and Basic cutest V)Tieset and Basic tieset.

b) Draw the network graph for the network shown in figure Find the number of possible trees for that graph and draw all possible trees.



SECTION - III

5 a) Explain the transient response of R-L series for DC excitations.

b) A series R-L circuit has R=100 ohm,L=20Henry and DC voltage is 200V and it is applied through switch which is closed at t=0.

Find i)Equation for current and voltage across different elements.

ii)Current at t=0.5 sec.

iii)Current at t=1sec.

iv)Time at which Vr=VL.

6 a) Define & Derive the expression for (i) Bandwidth (ii) Quality Factor.

b) A series RLC circuit has to be designed so that it has a band width of 320 Hz and inductance of the coil is 0.2H. It is has to resonate at 350Hz, determine the resistance of coil and capacitance of condenser. If the applied voltage is 150V, determine the voltage across capacitor and coil.

SECTION - IV

7 a) With the help of necessary graphs and sketches explain about VI characteristics PN Junction Diode.

b) Explain briefly principle of operation of photo conductors & Photo Diodes.

8 a) With the help of necessary graphs and sketches explain the potential distribution in an open circuited p- n function.

b) Compare LED Vs LCD in detail.

SECTION - V

9 a) Compare CB, CE and CE configurations of BJT.

b) Explain construction and operation of JFET.

10 a) Draw the circuit diagram of npn transistor as an amplifier with self- bias and explain its principle of working.

b) Explain briefly characteristics and applications of JFET.

R_13

Code : 13CS1001

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, MAY 2018

I B.Tech.

C PROGRAMMING AND DATA STRUCTURES

(Common to All Branches)

Time : 3Hrs Max. Marks : 60

*Answer **FIVE** Questions, Choosing **ONE** Question from each section*
All Questions carry equal marks

* * *

SECTION - I

1 (a) Explain with examples, various basic data types in C.
(b) What is an algorithm? Write an algorithm to determine whether the given number is is positive or negative number.

2 (a) Explain with example, difference between break and continue statements.
(b) Write a program to print the even numbers from 1 to 100.

SECTION - II

3 (a) What is an array? How two dimensional arrays are declared and initialized?
(b) Write a program to find the largest element in 3x3 matrix.

4 (a) Explain the difference between call by value and call by reference, with examples.
(b) What is recursion? Write a C program to find factorial of given number using recursion function.

SECTION - III

5 (a) Explain the process of declaring and initializing pointer variable. Give examples.
(b) Write a C program to illustrate the use of indirection operator '*' to access the value pointed by a pointer.

6 Explain the following with examples.
(i) Array of structures
(ii) Nested structures
(iii) Unions

SECTION - IV

7 Write a C program to implement Queue using arrays ad perform its common operations.

8 Discuss with example, the following with respect to singly linked list.
(i) Inserting an element as the first element in the list.
(ii) Inserting an element as the last element in the list
(iii) Inserting an element at the specified position in the list

SECTION - V

9 Define graph. What are the various graph traversal methods? Explain in detail

10 (a) Write an algorithm to sort elements using buble sort technique. Explain with example.

(b) Write an algorithm to search for an element in a list using linear search technique. Explain with example.

Code :17CS1201

B.TECH. DEGREE EXAMINATION, MAY 2018

I B.Tech. II Semester

C PROGRAMMING

(Common to EEE, ECE & CSE)

Time: 3Hrs Max. Marks: 60

Answer ONE Question from each section
All Questions carry equal marks

* * *

SECTION - I

1. (a) Discuss the steps involved in executing C program.

   (b) Define Variable? Explain the Rules for defining Variables.

2. (a) What is Compiler? Mention the Rules for writing C programs.

   (b) Define Type Conversion. Develop a C program illustration the concept of Type conversion

SECTION – II

3. (a) What is Conditional Operator? Write a C program using Conditional Operator.

   (b) Explain about different Character I/O functions in C.

4. (a) Explain Arithmetic Operators in C. Also discuss associativity and precedence of operators in arithmetic operations.

   (b) List out and explain the use of Escape Sequences in writing C program?

SECTION – III

5. (a) Explain about different iterative statements.

   (b) Write a C program to compute sum of N natural numbers.

6. (a) Distinguish if-else statement and switch statement.

   (b) Write a C program to print even numbers from 1 to N.

SECTION – IV

7 (a) Define Array. Explain with program how to initialize, access and print the array elements.

   (b) Write a C program to compare two strings for equality without using **strcmp( )** function.

8 What is String? Explain about String Handling functions.

SECTION – V

9 (a) What is Pointer? Explain Pointer Arithmetic with an example.

(b) Explain how array elements can be accessed by using pointer.

10 What is Function Prototype? Explain about Parameter Passing Techniques.

SECTION – VI

11 (a) How does structure differ from an array? Explain.

(b) What is File? Explain the importance of **fseek( )** and **rewind( )** in File operations.

12 (a) What is Union? Explain it with your own example.

(b) What is Command Line Argument? Demonstrate how command line arguments are passed to a C program.

R -13

Code : 13SH1005

B.TECH. DEGREE SUPPLEMNETARY EXAMINATION, MAY 2018

I B.Tech.

ENGINEERING CHEMISTRY

(Common to All Branches)

Time : 3Hrs Max. Marks : 60

*Answer **FIVE** Questions, Choosing **ONE** Question from each section*
All Questions carry equal marks

* * *

SECTION - I

1. (a) Explain the functioning of glass electrode.
   (b) Describe A1- Air battery and write the cell reactions for charging process.

2. (a) Explain the theories of corrosion.
   (b) Give an account on cathodic proection.

SECTION – II

3. (a) What are electrical insulators? How are they classified? Give some examples.
   (b) Explain the applications of gaseous insulators.

4. (a) Discuss the characteristics of electrical insulators.
   (b) Explain the properties of lubricants with some examples.

SECTION – III

5. (a) Discuss the advantages of gas calorimeter.
   (b) Explain the significance of solid fuels in fuel technology.

6. (a) Discuss the Fischer Troph.s synthesis.
   (b) How the gaseous fuels are superior than liquid and solid fuels ? Give some examples.

SECTION – IV

7 (a) How to estimate the dissolved oxygen? Explain through an example.
   (b) Discuss the industrial use of water in the following aspects.
   (i) Scale of sludge (ii) Boiler corrosion.

8 (a) Discuss the lime soda process. Give necessary chemical equations.
   (b) 100 ml of a simple of hard water neutralizes exactly 12ml of 0.12N HCl using Methyl orange indicator , What kind of hardness is present? Express the same in terms of equivalent of $CaCO_3$.

SECTION – V

9 (a) Give the classification of polymerization.
   (b) Give an account on natural rubber.

10 (a) Discuss the preparation and engineering applications of
   (i) Buna – N (ii) Neoprene
   (b) Write short notes on
   (i) Nylons (ii) Urea Formaldehyde.

R-13

Code : 13SH1003

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, MAY 2018

I B.Tech.

ENGINEERING MATHEMATICS – II
(Common to All Branches)

Time : 3Hrs

Max. Marks : 60

Answer FIVE Questions, Choosing ONE Question from each section
All Questions carry equal marks

* * *

SECTION - I

1 (a) Solve $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = xe^{3x} + \sin(2x)$

(b) Solve by method of variation of parameters, $y'' - 2y' + y = e^x \log(x)$

2 (a) Solve $x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} + y = (logx)\sin(logx)$

(b) Solve

$$(2x-1)^2\frac{d^2y}{dx^2} + (2x-1)\frac{dy}{dx} - 2y = 8x^2 - 2x + 3$$

SECTION - II

3 (a) Find the Laplace Transform of (i) $\frac{cos\sqrt{t}}{\sqrt{t}}$ (ii) $t\cos(at)$

(b) Evaluate $L\{e^{-t}\int_0^t \frac{\sin(t)}{t}dt\}$

4 Draw the Graph of the periodic function

$$f(t) = \begin{cases} t, & 0 < t < \pi \\ \pi - t, & \pi < t < 2\pi \end{cases}$$

and find its Laplace transform.

SECTION - III

5 (a) Find the inverse Laplace transforms of (i) $\frac{s^2}{(s-2)^3}$ (ii) $\frac{1}{s(s+a)^3}$

(b) Apply convolution Theorem to evaluate $L^{-1}\left(\frac{s}{(s^2+a^2)^2}\right)$

6 Solve by the method of transforms the equation

$y'''+2y'' - y' - 2y = 0.$

Given that $y(0) = y'(0) = 0 \; and \; y''(0) = 6$

SECTION - IV

7 Expand $f(x)=x\sin(x)$ as a Fourier series in the interval $0<x< 2\pi$

8 (a) Obtain the Fourier Series $y=X^2$ in $-\pi < x < \pi$ using the two values of y, show that $\frac{1}{1^4}+\frac{1}{2^4}+\frac{1}{3^4}+\frac{1}{4^4}+\cdots = \frac{\pi^4}{90}$

(b) Express $f(x) = x$ as a half range cosine series in $0<x<2$

SECTION - V

9 (a) Find the Fourier Cosine transform of e^{-x^2}

(b) Find the Fourier Sine transform of $\frac{e^{-ax}}{x}$

10 Solve the integral equation

$$\int_0^{\infty} f(\theta)\cos(\propto \theta)\, d\theta = 1-\propto, 0 \le a \le 1$$
$$= 0, \propto > 1$$

Hence evaluate $\int_0^{\infty} \frac{sin^2 t}{t^2} dt.$

R-13

Code : 13SH1004

B.TECH. DEGREE SUPPLEMENTARY EXAMINATION, MAY 2018

I B.Tech.

ENGINEERING PHYSICS

(Common to All Branches)

Time : 3Hrs Max. Marks : 60

*Answer **ONE** Question from each section*
All Questions carry equal marks

* * *

SECTION - I

1. (a) Describe the behavior of free particle in one dimensional Potential well.

   (b) An electron is bound in a one dimensional potential well of width of 0.2nm.Find its energies in the first and second excited states.

   Given $h = 6.63 \times 10^{-34}$ *JS and* $m = 9.1 \times 10^{-31}$ *Kg.*

2. (a) Derive the expression for electrical conductivity in a metal using Classical free electron theory and mention its merits and demerits.

   (b) Explain the classification of solids into, conductors, semiconductors and insulators based on energy bad structure.

SECTION – II

3. (a) Explain Hall Effect in a semiconductor.

   (b) Derive continuity equation for the flow of charge carriers in a semiconductor .

4. (a) What is Bohr magneton?

   (b) Explain hysteresis of ferromagnetic material.

   (c) Distinguish between hard and soft magnetic materials .

SECTION – III

5. (a) Show that FCC is most closely packed structure when compared to Simple Cubic and Body Centered cubic structure by working out their package factor.

   (b) Derive the expression for interplanar spacing in cubic crystal.

6. (a) Describe crystal structure determination by Laue method.

   (b) Explain edge dislocation in solids.

SECTION – IV

7 (a) Distinguish between Spontaneous and Stimulated emission of radiations.

(b) Derive the relation between various Einstein's Coefficients.

(c) Mention the important components of laser device.

8 (a) Describe the production of ultrasonic waves by magnetostiction method.

(b) Mention some of the easy way of detection of Ultrasonic waves.

SECTION – V

9 (a) Explain the working principle of an optical fiber.

(b) Derive an expression for numerical aperture of an optical fiber.

(c) A fiber has a core refractive index of 1.45 and cladding refractive index of 1.35 .Find its numerical aperture.

10 (a) Explain the superconductivity state with the help of BCS theory.

(b) Mention important applications of superconductors.

R-13

Code : 13SH1001

B.TECH. DEGREE **SUPPLEMENTARY** EXAMINATION, MAY 2018

I B.Tech.

ENGLISH
(Common to All Branches)

Time : 3 hours Max. Marks: 60

*Answer **FIVE** Questions, Choosing **ONE** Question from each section*
All Questions carry equal marks

* * *

SECTION - I

1. (a) What are the main causes for soil erosion? What measures can be taken to check soil erosion.

   (b) Write briefly about young Washington's life at Mrs Ruffner's house.

2. (a) "Mission mode program helps to solve this problem'. Explain briefly the plans of Kalam to solve the problem at Bokaro Steel Plant ?

   (b) Homi Jehangir Bhabha is known as a versatile genius . Describe his contribution to the development of our nation ?

SECTION - II

3. (a) Write a letter to the Manager of a bank in your city applying for a student loan of Rs 3 lakhs for your sister, who has admitted to an undergraduate law program. Ask what the bank interest rate on student loan, what documents are require and how long process will take.

   (b) Imagine the following situation and write a dialogue. Your teacher asked you to complete the project and bring it to the class . You haven't completed it because you had severe headache the previous night. You express your apologies to the teacher.

4 (a) Write a letter to the Editor of a newspaper complaining about the vulgar movie posters near schools and college.

   (b) Write a paragraph not exceeding 75 words about
   "The Examination System needs a change'

SECTION - III

5. (a) Write a report of the TV channels viewed by different age groups

   (b) Write with a/an or the in the blanks

   I have _____house and _____flat _____house is in Rajamundary and _____flat in Vizag.

6. (a) Write a speech about ' **Unemployment in India'.**

(b) Fill in the blanks with prepositions.

1. The Student complained _____the hostel facilities.
2. I discussed the project _____Peter.
3. He is not responsible _____this
4. All teachers are proud _____of him.

SECTION - IV

7. **Correct the errors and rewrite any twelve of the following sentences**

a. Why you are roaming on the roads.
b. Neither the supervisor nor the staff members was able to calm the distressed client.
c. The doctor advised us drinking low –fat – milk.
d. I, you and she have been commended for the success of the project.
e. Her information are biased.
f. She seldom sees her parents in the village , is she?
g. Games not only harden the children even enable them to endure the weather
h. The agreement is between her and we
i. Janaki is my cousin sister.
j. I stood among Hari and Rama.
k. He has lived here since three years.
l. The film is worth to watch.
m. Ramu goes to the school everday.
n. Jasmine smells sweetly.
o. Twenty miles are not a long sistance.
p. I am fit enough to join the expedition , am I

SECTION - V

8. (a) **Read the Passage and answer the Questions**

With the help of technological advancement , beginning with X-Ray and progressing to ECG, EEG, Ultra Sound NMR imaging, and of course in computer technology, new methods of investigations and diagnosis have begun to dominate medical practice. As far as theory is concerned, the biggest break thorough since the advent of the germ theory has been in genetic medicine. Medical genetics refer to the application of the knowledge to medical care. This has special relevance to the causes and correctiveness for genetic disorders. Following the success of the Human Genome Project , Scientists are speculating about the possibility of being able to predict the susceptibility of individuals to specific disorders, like the propensity to heart disease, or to cancer or to mental disorders, etc. Nor , surprising, there is wide uneasiness also that this would be like opening a Pandora's Box, because of the very high possibility that such information will be misused, invariably to the disadvantage of the weaker and helpless sections of the people . At another level, there is talk of human cloning , designer babies, and the science fiction like possibility of growing spare organs through advances in stem cell research.

It may be claimed that with the advances in microbiology, the development of vaccines for all the major infections and communicable diseases and the UN assisted mass immunization programs, the first frontier of medicine was successfully crossed. Of course it has to be mentioned that the challenges of implementation, including the political and economic agenda of poverty eradication remain to be addressed.

(P.T.O)

1. What are the new methods of investigations and diagnosis that have begun to dominate medical practice?
2. Would you agree that medical genetics is the biggest breakthrough human have had in the area of medicine? Why?
3. How do you think this breakthrough in medical genetics may be misused?
4. Which aspects of our socioeconomic , political and cultural background may pose a challenge to the successful implementation of the latest medical program.

(b) **Fill in the blanks with the correct verb forms**

a. The train _____at 10 p.m. on Friday (leave)
b. I have _____Shazia and Manit for a long time (know)
c. Their flight _____at three in the morning (arrive)
d. The girls are _____ in the backyard.(play)