

Subject Code: R16CC1201

I B. Tech II Semester Supple Examinations, October-2020

INTERACTIVE ENGLISH

(Common to CE, EEE, ME, ECE & CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What was Jainulabdeen's daily routine?
- (b) What is Satya Nadella's priority number one as the CEO of Microsoft?
- (c) In what ways is Azim Premji a modest man?
- (d) Describe Sachin's style of batting.
- (e) What motivated Sam Pitroda to go to the United States?
- (f) Mention the styles of communication.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Narrate the life experiences of APJ Abdul Kalam.
 - (b) Describe the process of communication with a pictorial depiction.
- [7+5]**
3. (a) In what way have Steve Ballmer and Bill Gates inspired Satya Nadella?
 - (b) Justify the importance of listening in effective communication and list out the tips for effective listening?
- [7+5]**
4. (a) What effect did the expulsion of IBM have on Azim Premji?
 - (b) Write an essay on the advantages and disadvantages of social media.
- [7+5]**
5. (a) Describe briefly the game of cricket using appropriate vocabulary.
 - (b) Convert the following into Indirect speech
 - i. Ajay said, "I am stressed."
 - ii. My father said to me, 'Don't waste your time.'
 - iii. She said, "Is your father at home?"
 - (c) Convert the following into passive voice
 - i. He washes his bicycle every Sunday.
 - ii. They are watching a movie.

[7+3+2]

6. (a) Why should India take the lead in presenting the world with a new model of development?

(b) Correct the following sentences where ever necessary.

- i. The doctor made him to take rest.
- ii. Either you are she are presenting a paper.
- iii. Could you return back the library cards?
- iv. One of the boys have got qualified in the entrance test.
- v. The man seems rather healthy.
- vi. They all are nice people.
- vii. Vidya moved to Hyderabad, isn't he?
- viii. Everyone here knows Telugu, doesn't they?
- ix. The painting is too beautiful.
- x. Where you are staying?

[7+5]

7. (a) Write an email (45-50 words) to raghava_hr@groupoantolin.com applying for the position of a software developer.

(b) Write one word substitutes for the following sentences.

- i. One who believes that God doesn't exist
- ii. Longing for the past
- iii. Agreed by everyone in a group
- iv. To shout loudly
- v. A person who loves mankind
- vi. The study of animal life

(c) Replace the underlined word in each sentence with a suitable synonym

- i. The speech sounded didactic.
a. moralistic b. romantic c. famous d. classic
- ii. She is a fascinating beauty.
a. enthralling b. enchanting c. imaginative d. attracting

[7+3+2]



Subject Code: R16CC1202

I B.Tech II Semester Supple Examinations, October-2020
INTEGRAL TRANSFORMS AND VECTOR CALCULUS
(Common to CE, EEE, ME, ECE & CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Find $L[e^{2t}]$.
- (b) Compute the Z -transform of $\sin n\theta$.
- (c) Write the formula for Fourier series expansion of $f(x)$ in $[0, 2\pi]$.
- (d) If $F\{f(x)\} = F(s)$, then write the value of $F\{f(x-a)\}$.
- (e) Show that $[\text{grad } a, \text{grad } b, \text{grad } c] = 0$, where $a = x + y + z$, $b = x^2 + y^2 + z^2$, $c = xy + yz + zx$.
- (f) State Gauss's divergence theorem.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Find $L[e^{-3t}(2\cos 5t - 3\sin 5t)]$ by using first shifting theorem on Laplace transforms.
- (b) Find the inverse Laplace transform of $\frac{1}{(s+1)(s+2)}$ by splitting into partial fractions or by using convolution theorem.
3. (a) Find the inverse Z -transform of $\frac{2z^2 + 3z}{(z+2)(z-4)}$.
- (b) Evaluate the Z -transform of $3n - 4\sin \frac{n\pi}{4} + 5a$.
4. (a) Expand $f(x) = x^2$ as a Fourier series in $[0, 2\pi]$.
- (b) Obtain the Fourier sine and cosine series for $f(x) = x$ in the interval $0 \leq x \leq \pi$. Hence show that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \dots = \frac{\pi^2}{8}$.
5. (a) Find the Fourier cosine transform of $f(x) = \begin{cases} x, & \text{for } 0 < x < 1 \\ 2-x, & \text{for } 1 < x < 2. \\ 0, & \text{for } x > 2 \end{cases}$

(b) Find the Fourier transform of $f(x) = \begin{cases} 1 & \text{for } |x| < 1 \\ 0 & \text{for } |x| > 1 \end{cases}$. Hence evaluate $\int_0^{\infty} \frac{\sin x}{x} dx$.

6. (a) Find $\text{div } \vec{F}$ & $\text{curl } \vec{F}$, where $\vec{F} = \text{grad}(x^3 + y^3 + z^3 - 3xyz)$.

(b) Show that $\vec{F} = (x^2 - yz)\vec{i} + (y^2 - zx)\vec{j} + (z^2 - xy)\vec{k}$ is irrotational and find its scalar potential function.

7. Verify Green's theorem in a plane for $\oint_C (3x - 8y^2) dx + (4y - 6xy) dy$ where C is the boundary of the region bounded by $x=0$, $y=0$ and $x+y=1$.



Subject Code: R16CC1203

I B.Tech II Semester Supple Examinations, October-2020

ENGINEERING PHYSICS
(Common to CE, EEE & ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) State the basic conditions for the phenomenon of interference of light.
- (b) Specify any four characteristics of laser light.
- (c) Mention the difference between primitive and non-primitive unit cells
- (d) What is meant by reverberation time?
- (e) An electron is confined to move in a one dimensional potential well of length 5 \AA . Find the quantized energy values for the two lowest energy levels.
- (f) Draw the energy band diagram which includes Fermi level, acceptor and donor energy levels of n-type and p-type semiconductors.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Discuss the Fraunhofer diffraction at single slit. Obtain the condition for principal maxima and minima. (8)
- (b) A transmission grating has 8000 rulings per cm. the first order principal maximum due to a monochromatic light source occurs at an angle of 30° . Determine its wavelength of light. (4)
3. (a) Discuss the construction and working of He-Ne laser with neat sketch of energy. (8)
- (b) A fibre cable has an acceptance angle of 30° and core of refractive index 1.4. Calculate the refractive index of the cladding. (4)
4. (a) Derive the relation between atomic packing factor of SC, BCC and FCC crystal structures. (9)
- (b) X-rays of unknown wavelength give first order Bragg reflection at a glancing angle of 20° with (212) planes of copper having FCC structure. Find the wavelength of X-rays, if the lattice constant for copper is 3.615 \AA . (3)
5. (a) Explain the Phenomenon of magnetostriction. Draw a neat labelled diagram for the production of ultrasonics by magnetostriction oscillator. (8)
- (b) Reverberation time for a cubical chamber of 10mm width is 2.68 sec. calculate its average absorption coefficient. If one of the wall is covered with acoustic tiles the reverberation time will decrease to 2 sec. Calculate the sound absorption coefficient of acoustic tiles. (4)
6. (a) Based free electron theory, derive an expression for electrical conductivity of metals. How does electrical resistance change with impurity and temperature? (10)
- (b) Calculate the de Broglie wavelength of an electron moving with velocity 10^7 m/s . (2)
7. (a) State and explain Hall effect. Derive an expression for Hall voltage and Hall coefficient. Mention important applications of Hall effect. (9)
- (b) What is meant by effective mass of electron? (3)



Subject Code: R16CC1204

I B.Tech II Semester Supple Examinations, October-2020

ENGINEERING CHEMISTRY

(Common to ECE & CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

- (a) List out the effect of presence of impurities in water?
(b) Define vulcanization.
(c) Mention the applications of fullerenes in medical field?
(d) Generalize the disadvantages of hydrogen electrode?
(e) Point out the reason why catalytic cracking better than thermal cracking?
(f) Define Lambert-Beer's law.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

- (a) Explain (i) priming and foaming (ii) caustic embrittlement [6+6]
(b) Discuss hot lime soda process with a neat sketch. Calculate the amount of lime required for softening of 8,000 litres of hard water containing $\text{Mg}(\text{HCO}_3)_2 = 73$ ppm and $\text{MgSO}_4 = 120$ ppm.
- (a) Explain intrinsic p-doped conducting polymers with example. [6+6]
(b) Explain the preparation and uses of BUNA-N and polycarbonates.
- (a) Explain laser ablation and chemical vapour deposition method for preparation of carbon nanotubes.
(b) Explain the green synthesis method for preparation of adipic acid. [8+4]
- (a) Discuss the working of $\text{H}_2\text{-O}_2$ fuel cell with labelled figure. Give its applications.[7+5]
(b) Explain how nature of metal influences the corrosion.
- (a) Describe bomb calorimeter method for determination of calorific value of fuel. [7+5]
(b) Explain fluid bed catalytic cracking for preparation of gasoline.
- (a) Explain the photo physical process in electronically excited molecules. [8+4]
(b) Discuss the calorimetric analysis of metals.



Subject Code: R16CC1205

I B.Tech II Semester Supple Examinations, October-2020

ENVIRONMENTAL STUDIES

(Common to CE, EEE & ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define ecology and ecosystem?
- (b) Define water logging?
- (c) List the indirect values of biodiversity.
- (d) List the chemical treatments for industrial effluents?
- (e) List the bio-medical wastes?
- (f) What is Ecotourism?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain energy flow pattern in different types of ecosystem
- (b) List the main components of ecosystem and briefly describe the functions of each.
3. (a) List the Mineral Resources, uses and exploitation?
- (b) What are alternate energy sources? Explain their present status, merits and demerits.
4. (a) Explain in-situ and ex-situ conservation of biodiversity
- (b) Discuss the status of India as a mega diversity nation of biodiversity.
5. (a) Explain primary and secondary sources of air pollution?
- (b) Explain the methods for the control of water pollution.
6. (a) List the major provisions in Forest Conservation Act 1980
- (b) Write notes on the following (i) Global warming (ii) Acid rain (iii) Ozone layer depletion
7. (a) Explain the methodology for EIA
- (b) write the Impact Assessment and various stages of EIS

Subject Code: R16CC1206

I B.Tech II Semester Supple Examinations, October-2020

ENGINEERING MECHANICS

(Common to CE & ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Define Force. What are its characteristics?
- (b) Explain the concept of moment of a force about a point.
- (c) State Varignon's theorem.
- (d) Define Radius of gyration?
- (e) Define Angle of Friction and Angle of Repose
- (f) State D'Alembert's Principle

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) A ball of weight Q and radius r is attached by a string AD to a vertical wall AB , as shown in Fig.1. Determine the tensile force S in the string and the reaction R_b against the wall at B if $Q = 60 \text{ N}$, $r = 75 \text{ mm}$, $AB = 100 \text{ mm}$. Neglect friction at wall. [6M]

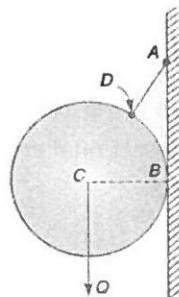


Fig.1

- (b) A 667.5 N man stands on the middle rung of a 222.5 N ladder, as shown in Fig.2. Assuming a smooth wall at B and a stop at A to prevent slipping, find the reactions at A and B . [6M]

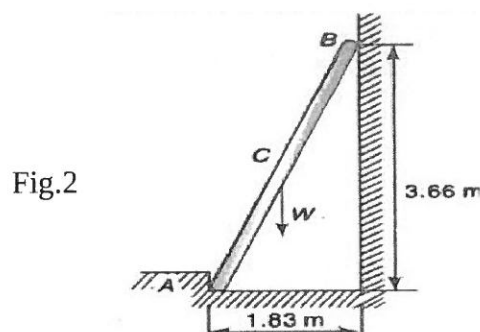


Fig.2

3. Two blocks of weights W_1 and W_2 rest on a rough inclined plane and are connected by a short piece of string as shown in Fig.3. If the coefficient of friction are $\mu_1=0.2$ and $\mu_2=0.3$ respectively, find the angle of inclination of the plane for which sliding will impend. Assume $W_1=W_2=22.25$ N. [12M]

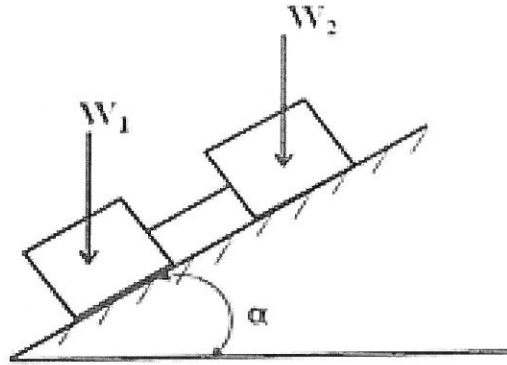


Fig. 3

4. With respect to coordinate axes x and y , locate the centroid C of the shaded area as shown in the fig.4. [12M]

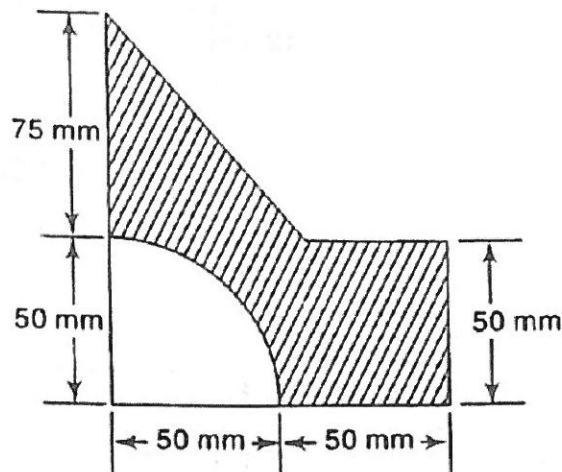


fig.4

5. (a) State and prove parallel axis theorem [4M]
 (b) Determine the moment of inertia of the cross-sectional area of the I-section with respect to the x and y axis as shown in fig.5. [8M]

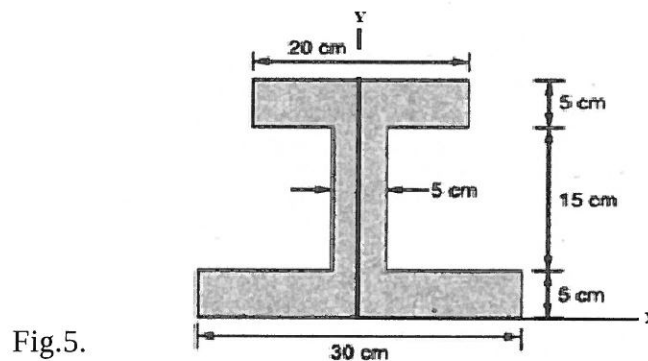


Fig.5.

6. Derive Mass Moment of Inertia for solid cylinder from basic principles. [12M]

7. (a) State and prove work-Energy Principle [4M]
- (b) Referring to Fig.6, find the acceleration a of the falling weight P if the coefficient of friction between the block Q and the horizontal plane on which it slides is μ . Neglect inertia of the pulley and friction on its axle. The following numerical data are given $P=44.5$ N, $Q= 53.4$ N, $\mu=1/3$. [8M]

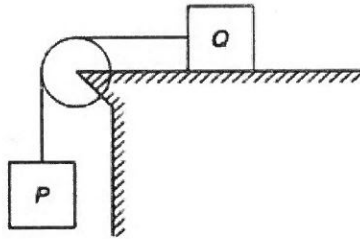


Fig.6.



Subject Code: R16CC1207

I B.Tech II Semester Supple Examinations, October-2020

ENGINEERING DRAWING

(Common to CE & ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Construct a regular pentagon of side 30mm by using general method.
- (b) Draw the projections of the following points on the same ground line keeping the projectors 25mm apart
i) point 'R' is 25mm below the HP and 10mm behind VP
ii) point 'S' is 20mm above HP in the VP
- (c) Explain about traces of a line in engineering graphics.
- (d) . Draw the projections of a square of side 30mm perpendicular to H.P and parallel to V.P, plane is above H.P, 20mm in front of V.P
- (e) Draw the projections of a cone base diameter 40 mm, axis 80 mm long, its base is resting on H.P.
- (f) Draw Isometric projection of circular lamina with a 60mm diameter on all the three principle planes using 4 center method.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Draw an ellipse when the distance of its vertex from its directrix is 24 mm and distance of its focus from directrix is 42 mm.
- (b) The distance between Coimbatore and Madurai is 200 km and its equivalent distance on the map measures 10 cm. Draw a diagonal scale to indicate 223 km and 135 km.
- 3.(a) Draw the projections for the given points.
 - i) Point A 10 mm above HP and below VP.
 - ii) Point C 10 mm below HP and in front of VP.
 - iii) Point L 20 mm below HP and behind VP.
 - iv)
- (b) A straight line AB of true length 100 mm has its end A 20 mm above HP and 30 mm in front of VP. The top view and front view of the line is 80 mm and 75 mm respectively. Draw the projections of the line AB and also find the true inclinations of the line with HP and VP.

4. (a) A line PS 65mm has its end P, 15mm above the HP and 15mm in front of the VP. It is inclined at 55° to the HP and 35° to the VP. Draw its projections.
- (b) A straight line AB is 50 mm long. End A is 10 mm above HP and 15 mm in front of VP. The front view of the line is inclined at 45° and the top view is inclined at 60° to the xy line. Draw the projections of the line AB (front view and top view) and also obtain the true inclination of the line AB with HP and VP
5. (a) A regular hexagon of 25mm side, on the V.P is plane inclined at 45° to V.P and perpendicular to H.P. draw its projections and show its traces.
- (b) Draw the projections of a circle 50mm diameter resting in the H.P on a point 'A' on the circumference its plane inclined at 45° to the H.P, the top view of diameter AB making 30° angle with the V.P.
6. (a) A triangular prism of base of side 25 mm and 60 mm long rests with one of its edge on HP such that the rectangular face containing the edge on which the prism rests is inclined at 30° to HP. The edge on which prism rests is inclined at 60° to VP. Draw its projections.
- (b) Draw the development of the lateral surface of the cone of base diameter 48mm and altitude 55mm.
7. A hexagonal prism of base side 20mm and height 40mm as a square hole of side 16mm at the centre. The axes of the square and hexagon coincide. One of the faces of the square is parallel to the face of the hexagon. Draw the isometric projection of the prism with hole to full scale.



Subject Code: R16EE1208

I B.Tech II Semester Supple Examinations, October-2020

ENGINEERING GRAPHICS

(EEE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. a) Define representative fraction.
- b) How do you draw a tangent to circle?
- c) Difference between first angle and third angle Projection.
- d) Define auxiliary plane.
- e) Draw the projections of a straight line 70 mm long when it is parallel to both HP and VP. It is 15 mm in front of VP and 40 mm above HP.
- f) Explain isometric scale.

[2+2+2+2+2+2]

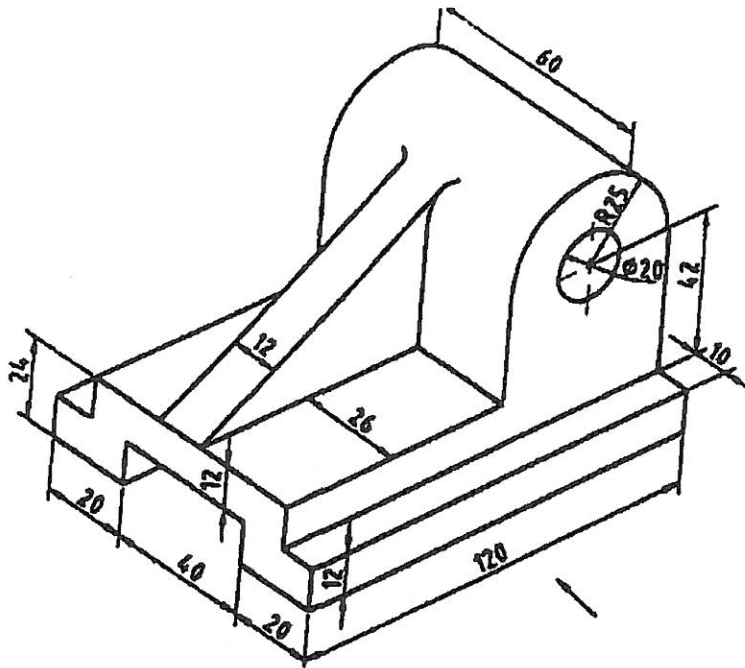
PART-B

4 X 12 = 48

2. Draw an ellipse by 'concentric circles method' and find the length of the minor axis with the help of the following data: (i) Major axis = 100 mm. (ii) Distance between foci 80 mm. Draw a tangent and normal at a distance of 20 mm from the major axis.
3. A line AB, 65 mm long, has its end A 20 mm above the H.P. and 25 mm in front of the V.P. The end B is 40 mm above the H.P. and 65 mm in front of the V.P. Draw the projections of AB and shows its inclinations with the H.P. and V.P.
4. A point P is 15 mm above the H.P. and 20 mm in front of the V.P. Another point Q is 25 mm behind the V.P. and 40 mm below the H.P. Draw projections of P and Q keeping the distance between their projectors equal to 90 mm. Draw straight line joining (i) their top views and (ii) their front views.
5. Draw the projections of a cone, base 50 mm diameter and axis 75 mm long, lying on a generator on the ground with the top view of the axis making an angle of 45° with the vertical plane.

6. A square pyramid side of base 40mm and height 60mm resting centrally on top of the cube of 60mm long edges. The axis of both the solids coincides with each other. Draw the isometric view of the combination of the solids.

7. Draw the (a) Front view (b) Top view and (c) Side view for the following figure.





Subject Code: R16EE1209

I B.Tech II Semester Supple Examinations, October-2020
ELECTRIC CIRCUIT ANALYSIS - I
(EEE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

- (a) What are the differences between dependent and independent sources.
(b) Find the sinusoid corresponding to the following phasor :
 $V = -25 \angle 40^\circ$ V.
(c) A Coil with $R = 10 \Omega$ and $L = 0.2$ H is in series with a capacitor of 20 micro Farad.
Determine Band width.
(d) Define Graph and Tree.
(e) State and explain Maximum Power transfer theorem.
(f) State Faraday's laws of electromagnetic induction.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

- (a) Calculate the effective resistance between the points A and B in the circuit shown in below Figure 1.

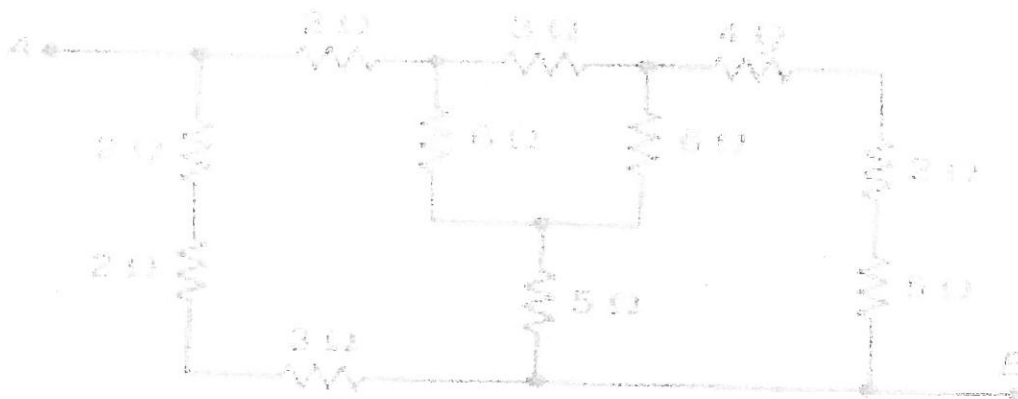


Figure -1

- (b) Discuss the concept of source transformation technique
- (a) In the circuit shown in Figure 2, Calculate the average power absorbed by the resistor and inductor. Find the average power supplied by the voltage source.

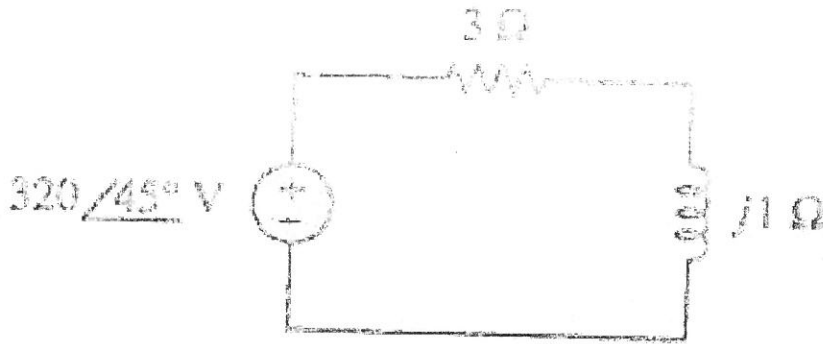


Figure-2

(b) Find the rms value, average value and form factor of the voltage wave form shown in Figure 3.

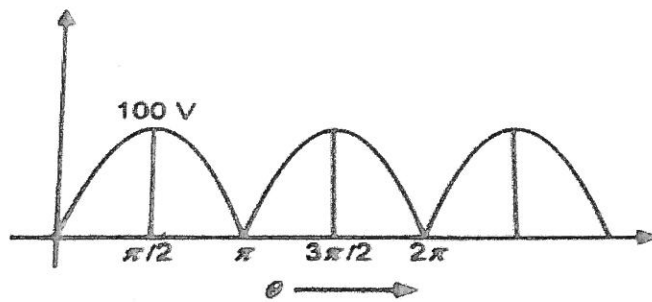


Figure-3

4. (a) A series RLC circuit has the values: $R=10 \Omega$, $L=0.01H$, $C=100\mu F$. Calculate resonant frequency, quality factor, bandwidth, and the half-power frequencies.

(b) Determine the resonant frequency of the circuit shown below Figure 4.

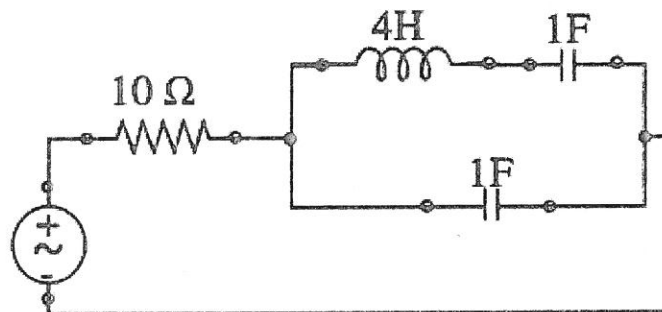


Figure-4

5. (a) Construct the dual of the network shown in below Figure 5.

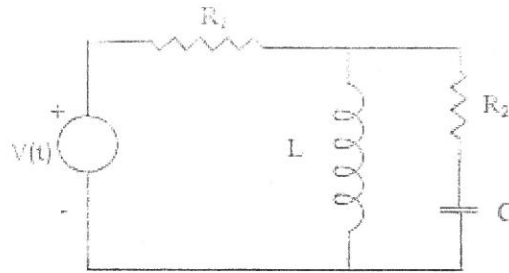


Figure-5

(b) Draw the directed graph, tree and show the loops for the network shown in Figure -6.

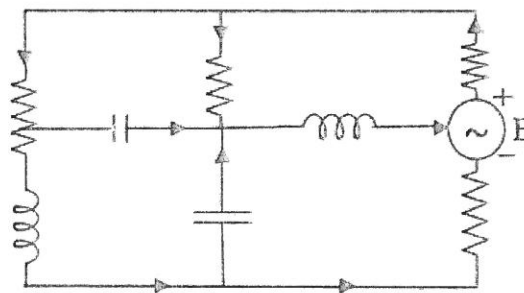


Figure-6

6. (a) State and explain Super position theorem.

(b) In the network shown in Figure 7 the impedance $5+j2$ ohm is changed to $1+j1$ ohm, find the change in current drawn from the supply by direct calculation and then verify by the compensation theorem.

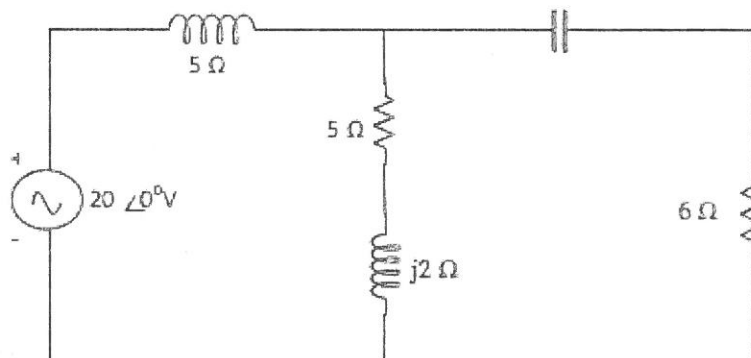


Figure-7

7. (a) Explain the dot convention in coupled circuits.

(b) Derive the relation between self-inductance, mutual inductance and coefficient of coupling.



Subject Code: R16EC1210

I B.Tech II Semester Supple Examinations, October-2020
PROGRAMMING WITH C
(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is Type casting? Give an Example.
- (b) Distinguish between while and do..while statement in C.
- (c) Explain call by reference concept in two sentences with example.
- (d) Write syntax for any two dynamic memory allocation functions?
- (e) What is a Pointer? How a variable is declared to the pointer?
- (f) What is the functionality of fseek() function ?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Write a program in C to find the area and perimeter of a circle.
 - (b) Write a program in C to print the numbers from 4 to 9 and their squares.
3. (a) Write a program to print the following series
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
 - (b) Write a program to find given string is palindrome or not.
4. (a) Write program for finding the GCD among two numbers using recursion.
 - (b) Write a C program to find the Matrix multiplication of two 3 x 3 matrices.
5. (a) What are various storage classes in C? Discuss their uses and scope.
 - (b) Write a program to find second highest and smallest number in the given array.
6. (a) How to initialize and access pointer variable? Explain pointer to a function with example.
 - (b) Write the pros and cons of scanf() and gets() function in C.
7. (a) Write a program to merge two files into single file.
 - (b) Define structure and union. Explain the way of declaring and accessing them

Subject Code: R16EC1211

I B.Tech II Semester Supple Examinations, October-2020

NETWORK ANALYSIS

(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

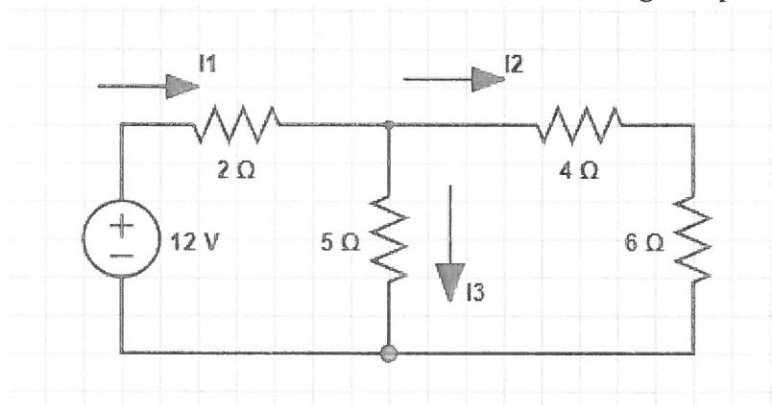
1. (a) What is meant by unilateral and bilateral element?
- (b) Define the terms branch, node and tree in network topology?
- (c) A series RLC circuit consists of a resistance of 1 K Ω an inductance of 10 mH and a capacitance of 100 μ F. For a supply voltage of 100V, determine the resonant frequency?
- (d) State and explain maximum power transfer theorem?
- (e) Prove the conditions for symmetry and reciprocity in hybrid parameters?
- (f) Draw the RL and RC circuits in DC excitation?

[2+2+2+2+2+2]

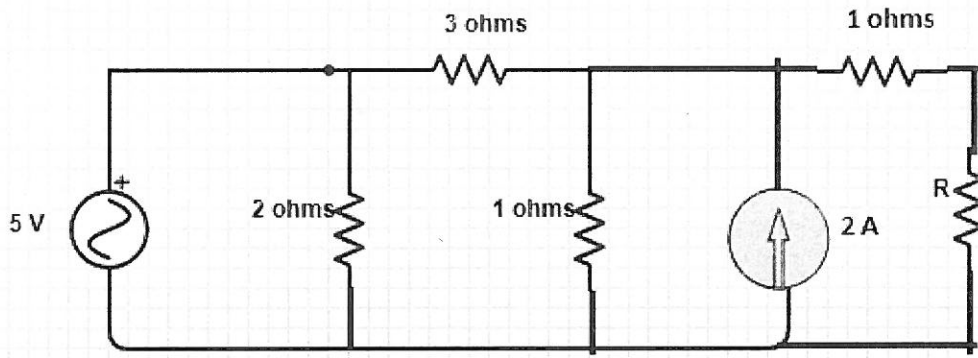
PART-B

4 X 12 = 48

2. (a) Explain briefly about series and parallel connection of circuit elements with example?
- (b) State and explain Kirchoff's voltage and current law with an example?
3. (a) Explain the principle of duality with an example?
- (b) In the network shown below, find all branch currents and voltage drop across all resistors?



4. (a) A series RLC circuit consists of a resistance of 25 ohms, inductance 0.4 Capacitance of 250 microfarad is connected a supply voltage of 230 V, 50Hz. Find the total impedance, current, power, power factor, voltage across coil and capacitance?
- (b) Explain the phenomenon of star to delta and delta to star conversion with neat diagrams?
5. (a) Show that under the condition of maximum power transfer, the efficiency of circuit is 50%?
- (b) Find the value of R in the circuit shown in the figure below such that maximum power transfer. What is the amount of this power?



6. (a) Derive the symmetry and reciprocity conditions for ABCD parameters and h parameters?
 (b) Derive the expression for coefficient of coupling?
7. (a) Derive the step response of RL circuit in s-domain?
 (b) Define time constant and draw the circuit of RLC in DC excitation?



Subject Code: R16EC1212

I B.Tech II Semester Supple Examinations, October-2020
PROFESSIONAL ETHICS, VALUES & PATENTS
(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What is 'Empathy'
- (b) Differentiate manager and consultant.
- (c) Write 'Professional rights' of an Engineer
- (d) Explain Tool Kit.
- (e) Classify intellectual property rights
- (f) Illustrate two cyber crimes in India.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain how Spirituality is one the best regulators of professional life.
3. (a) Write the significance of ethical theories in engineering professionals.
4. Discuss (a) Any three occupational crimes.
(b). Industrial espionage
5. Define and describe IPR Tool Kit.
6. Explain Patent registration process in detail.
7. (a) Intellectual property transferable to third party. Explain.



Subject Code: R16CS1213

I B.Tech II Semester Supple Examinations, October-2020
MATHEMATICAL METHODS
(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Justify that the following system of equations are consistent $2x - y - z = 2$, $x + 2y + z = 2$, $4x - 7y - 5z = 2$.

$$\begin{pmatrix} 1 & 2 & -2 \\ 1 & 0 & 3 \\ -2 & -1 & -3 \end{pmatrix}$$

- (b) Find the sum and product of eigen values of the matrix

$$\int_0^{\infty} \int_0^{\infty} e^{-(x^2+y^2)} dx dy$$

- (c) Change the integral into polar coordinates.
(d) Explain briefly the Bisection method to solve an algebraic or a transcendental equations.
(e) Prove that $\nabla \Delta = \Delta - \nabla$
(f) Write formulae to find definite integral value of a function using (i) Trapezoidal rule; and (ii) Simpson's 3/8th rule.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Reduce the matrix $\begin{bmatrix} 0 & 1 & 2 & 1 \\ 1 & 2 & 3 & 1 \\ 3 & 1 & 1 & 3 \end{bmatrix}$ to normal form and find the rank.

$$\begin{bmatrix} -3 & 2 & -1 \\ 6 & -6 & 7 \\ 3 & -4 & 4 \end{bmatrix}$$

- (b) Find LU decomposition for the matrix

3. (a) Verify Cayley-Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 4 \\ 2 & 3 \end{bmatrix}$ and express $A^5 - 4A^4 - 7A^3 + 11A^2 - A - 10I$ as a linear polynomial in A.

- (b) Determine λ so that $\lambda(x^2 + y^2 + z^2) + 2xy - 2yz + 2zx$ is a positive definite.

4. (a) Find the volume bounded by the cylinder $x^2 + y^2 = 4$ and the plane $y + z = 4$ and $z = 0$.
- (b) Evaluate $\iint_R x^2 \, dx \, dy$, where R is the region in the first quadrant bounded by the lines $x = y$, $y = 0$, $x = 8$ and the curve $xy = 16$.
5. (a) Find the root of the equation $xe^x - 3 = 0$ that lies between 1 and 2, correct to four places of decimals, using the method of false position.
- (b) Find the root of the equation $x^3 + x + 1 = 0$ that lies between -1 and 0 correct to four places of decimals, using the method of simple iteration.
6. (a) Using Newton's backward interpolation formula find y when $x = 27$ from the following

$x:$	10	15	20	25	30
$y:$	35.4	32.2	29.1	26	23.1

- (b) Using Lagrange's interpolation formula fit a polynomial to the following data

$x:$	0	1	3	4
$y:$	-12	0	6	12

7. (a) Solve $y' = y^2 + x$, $y(0) = 1$, using Taylor series method and compute $y(0.1)$ and $y(0.2)$.
- (b) Given that $\frac{dy}{dx} = \frac{y^2 - 2x}{y^2 + x}$ and $y = 1$ when $x = 0$. Find $y(0.2)$ using R-K fourth order method taking $h = 0.2$.



Subject Code: R16CS1214

I B.Tech II Semester Supple Examinations, October-2020
C PROGRAMMING
(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What is Ternary operator? Write the syntax to find maximum value among three values using Ternary operator.
- (b) Give the difference between Entry control and Exit control looping statements.
- (c) What are the different ways of calling a function? Explain with an example.
- (d) What are the different ways of declaring the pointers. Give an example to each.
- (e) Define Bit Field. Give the applications of Bit Fields.
- (f) Define Text file and Binary file. What are the extensions used to save binary and Text files.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) What is an Identifier. What are the identifier rules to be followed while writing a C program, [6M]
- (b) Explain the basic structure of C Program. Give an example program. [6M]
3. (a) Write a C program to find and display minimum and maximum elements in a given array of integers. [5M]
- (b) Write about the need and types of branching statements in C language? Discuss with examples. [7M]
4. Define Function. Explain the control flow of multi function program. Explain the different categories of Functions with suitable example. [12M]
5. (a) Define pointer to pointer. Explain with an example. [4M]
- (b) Explain Dynamic memory allocation with example. [8M]
6. Explain the following [3 × 4M = 12M]
(a) Structure (b) Union (c) Enumerations
7. (a) Explain different operation performed on File explain with an example. [5M]
- (b) Write a C Program to copy the content of one file to other file. [7M]



Subject Code: R16CS1215

I B.Tech II Semester Supple Examinations, October-2020

ELECTRONIC DEVICES AND LOGIC DESIGN

(CSE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Write the applications of diode.
- (b) Compare FET and MOSFET.
- (c) Explain Barkhausen criterion.
- (d) Convert the following number $(4567)_8$ to base 10.
- (e) Draw the 1-to-4 line DEMUX and truth table.
- (f) Define a universal shift register.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain PN diode characteristics in forward bias and reverse bias regions. [8]
- (b) Explain how Zener diode acts as a voltage regulator. [4]
3. Draw the structure of p-channel MOSFET and qualitatively explain the static drain and gate characteristics of the device. [12]
4. (a) With neat schematics explain the working of CC Amplifier. [6]
- (b) Explain RC phase shift oscillator. [6]
5. (a) Perform the following operations using 2's complement method: [6]
- (i) $(+55) - (+15)$ (ii) $(-55) - (-15)$.
- (b) What are universal gates? Realize AND, OR, NOT, XOR gates using universal gates. [6]
6. A combinational circuit has four inputs and one output. The output is equal to 1 when [12]
- (i) All the inputs are equal to 1 or
- (ii) None of the inputs are equal to 1 or
- (iii) When even numbers of inputs are equal to 1
- Design the above circuit using logic gates.
7. (a) Design a mod-5 synchronous counter using T-flip flop. [6]
- (b) With neat diagrams explain the working of Ripple counter. [6]
