

Part-A

1. (a) How does astrologer's appearance help him in his profession?
 (b) What are the usual measures to check soil erosion?
 (c) What are Kalam's thoughts on the education systems?
 (d) Differentiate between intensive and extensive reading.
 (e) What does Mrs. Meldon say about Eddie's death?
 (f) How does son stopped caring for her mother from the lesson 'Wood Rose'?

PART-B

2. (a) 'A great load is gone from me today'? Who says this and what made him to say in the story Astrologer's Day.
 (b) Write one-word substitutes for the following
 (i) Government by one
 (ii) A person who always thinks about himself
 (iii) That which cannot be avoided
 (iv) One who is all powerful
 (c) You are Adarsh, a graduate in Computer Science and Engineering from IIT Kharagpur. You have four years of experience as a Software Engineer in TCS. Write an e-mail application letter in response to an advertisement for the post of a Senior Software engineer in IBM Company. Attach your CV and testimonials for the Company's reference.

(2+2+2+2+2+2)

3. (a) Explain Kalam's ideology of 'Building a New State'
 (b) Correct errors, if any, in the following sentences and rewrite them.
 (i) I didn't went to school on Friday.
 (ii) I am having class now.
 (iii) My father got a pair of spectle.
 (iv) I drink two teas every day.
 (v) They won't leave the baby alone at home, will they not?

(7+5)

4. (a) Why does C. V. Raman say that the study of the nature and properties of water still has plenty of scope for Scientific research?
 (b) Expand the Proverb 'Rolling stone gathers no mass'

(7+5)

When another old cave is discovered in the south of France, it is not usually news. Rather, it is an ordinary event. Such discoveries are so frequent these days that hardly anybody pays heed to them. However, when the Lascaux cave complex was discovered in 1940, the world was amazed. Painted directly on its walls were hundreds of scenes showing how people lived thousands of years ago. The scenes show people hunting animals, such as bison or wild cats. Other images depict birds and most noticeably, horses, which appear in more than 300 wall images, by far outnumbering all other animals. Early artists drawing these animals accomplished a monumental and difficult task. They did not limit themselves to the easily accessible walls but carried their painting materials to spaces that required climbing steep walls or crawling into narrow passages in the Lascaux complex. Unfortunately, the paintings have been exposed to the destructive action of water and temperature changes, which easily wear the images away. Because the Lascaux caves have many entrances, air movement has also damaged the images inside. Although they are not out in the open air, where natural light would have destroyed them long ago, many of the images have deteriorated and are barely recognizable. To prevent further damage, the site was closed to tourists in 1963, 23 years after it was discovered.

1. What can be the best title that summarizes the main idea of the passage?
 2. In line 2, the words **pays heed** to are closest in meaning to _____.
 3. According to the passage, which animals appear most often on the cave walls?
 4. Why was painting inside the Lascaux complex a difficult task?
 5. What does the passage say happened at the Lascaux caves in 1963?

(7+5)

7. (a) Write an essay on 'demonetization and its effects'.
 (b) Read the paragraph given below and answer the following questions.
6. (a) 'Your bomb will destroy life' - Says Mrs. Meldon. Explain.
 (b) Fill in the blanks with suitable words.
 (i) I must(clear off/clear away/clear out) my cupboards.
 (ii) The Nicolas(has/have) a troubled history.
 (iii) Nothing can(alter/altar) the fact that he is my friend.
 (iv) Let us(proceed/ precede) to the auditorium.
 (v) Have you seen the new(stationary/ stationery) shop?

(7+5)

(7+2+3)

Column A	Column B
1	Fragile
2	absurd
3	havoc
4	Blithe
5	Callous
6	Voracious
	F
	greed

5. (a) Narrate how children neglect old parents from the story 'Wood Rose'?
 (b) Write an antonym for each of the words given below.
 (i) Obscure (ii) Consent (iii) Quick (iv) Pleasure
 (c) Match the words given in Column A with their meanings in Column B.

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 the integrating factor of $(1 + y^2) dx = (\tan^{-1} y - x) dy$
- (b) Find the general solution of the differential equation $(D^4 - 6D^3 + 12D^2 - 8D)y = 0$.
- (c) Verify Rolle's theorem for $f(x) = x^2$ in the range $[-1, 1]$.
- (d) If $u = \frac{x}{y} + \frac{z}{x+y} + \frac{z+x}{z}$, find the value of $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + z \frac{\partial u}{\partial z}$
- (e) Form the partial differential equation by eliminating the arbitrary constants a and b from $z = ax + by + a^2 + b^2$.
- (f) When a vibrating string fastened to two points l apart, has an initial velocity w_0 , write the initial conditions.

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

PART-B

2. (a) Solve the differential equation $\frac{dy}{dx} = \frac{x^3 + y^3}{xy^2}$
- (b) Find the orthogonal trajectories of the family of confocal conics $\frac{x^2}{a^2} + \frac{y^2}{k^2 + \lambda} = 1$, where λ is the parameter.
3. (a) Solve $x^2 \frac{d^2 y}{dx^2} + 4x \frac{dy}{dx} + 2y = e^x$
- (b) A simple pendulum of length l is oscillating through a small angle θ in a medium in which the resistance is proportional to the velocity. Find the differential equation of its motion. Discuss the motion and find the period of oscillation.
4. (a) If $f(x) = \log(1+x)$, $x > 0$, using Maclaurin's theorem with Lagrange's form of remainder, show that for $0 < \theta < 1$, $\log(1+x) = x - \frac{x^2}{2} + \frac{3(1+\theta x)^3}{x^3}$
- (b) Find the maximum and minimum values of $3x^4 - 2x^3 - 6x^2 + 6x + 1$ in the interval $(0, 2)$.

4X 12 = 48

5. (a) If by the substitution $u = x^2 - y^2$, $v = 2xy$, $f(x, y) = \theta(u, v)$, show that
- $$\frac{\partial^2 f}{\partial x^2} + \frac{\partial^2 f}{\partial y^2} = 4(x^2 + y^2) \left(\frac{\partial^2 \theta}{\partial u^2} + \frac{\partial^2 \theta}{\partial v^2} \right)$$
- (b) Given $xyz = 8$, find the value of x , y and z for which $u = \frac{x + 2y + 4z}{5xyz}$ is maximum.
6. (a) Find the partial differential equation by eliminating the function f from
- $$z = y^2 + 2f \left(\frac{1}{x} + \log y \right)$$
- (b) Solve $x^2(y - z) + y^2(z - x) + z^2(x - y) = 0$.
7. (a) Solve $\frac{\partial^2 z}{\partial x^2} - \frac{\partial^2 z}{\partial y^2} = \cos x \cos 2y$.
- (b) Using the method of separation of variables, solve $\frac{\partial u}{\partial x} = 2 \frac{\partial u}{\partial y} + u$ where $u(x, 0) = 6e^{-3x}$.

PART-A

1. (a) Determine the rank of a matrix $A = \begin{bmatrix} 8 & 4 & 3 \\ 2 & 1 & 1 \\ 1 & 2 & 1 \end{bmatrix}$

(b) Write the Statement of Cayley-Hamilton theorem

(c) Evaluate $\int_1^2 \int_2^0 \int_2^0 x^2 yz dx dy dz$

(d) Write merits and demerits of Newton-Raphson method

(e) Prove that $\Delta^3 y^2 = \Delta^3 y^5$

(f) State Simpson's $\left(\frac{1}{3}\right)^{th}$ rule and Simpson's $\left(\frac{8}{3}\right)^{th}$ rule.

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

PART-B

4X 12 = 48

2. (a) Investigate for what values of λ and μ so the simultaneous equations $x+y+z=6$, $x+2y+3z=10$, $2x+2y+\lambda z=\mu$ have (i) no solution, (ii) a unique solution and (iii) an infinite number of solutions.

(b) Apply Gauss elimination method to solve the equations: $x+4y-z=-5$, $2x+y-6z=-12$, $3x-y-z=4$.

1. Find the Eigen values and vectors of the matrix $\begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$ and hence reduce $6x^2+3y^2+3z^2-2yz+4zx-4xy$ to a sum of squares.

4. (a) Change the order of integration in $I = \int_{1-x}^0 \int_{2-x}^x xy dx dy$ and hence evaluate the same.

(b) Find the volume formed by the revolution of loop of the curve $y^2(a+x)=x^2(3a-x)$, about the x-axis.

5. (a) Find a real root of the equation $x \log_{10} x = 1.2$ by Regula-falsi method correct to four decimal places.

(b) Find a root of the equation $x^4 - x - 10 = 0$ by bisection method correct to two decimal places.

6. (a) Using Newton's forward formula, find the value of $f(1.6)$, if
- | | | | | | |
|---------|------|-----|------|------|-----|
| $x:$ | 1 | 1.4 | 4.82 | 5.96 | 6.5 |
| $f(x):$ | 3.49 | 1.4 | 4.82 | 5.96 | 6.5 |
- (b) Use Lagrange's interpolation formula to find the value of y when $x=10$, if the following values of x and y are given:
- | | | | | | |
|---------|------|-----|------|------|-----|
| $x:$ | 1 | 1.4 | 4.82 | 5.96 | 6.5 |
| $f(x):$ | 3.49 | 1.4 | 4.82 | 5.96 | 6.5 |
7. (a) Using Runge-Kutta method of fourth order, solve $\frac{dy}{dx} = \frac{y^2 - x^2}{y^2 + x^2}$ with $y(0)=1$ at $x=0.2, 0.4$
- (b) Use the Trapezoidal rule with $n=4$ to estimate $\int_1^0 \frac{1+x^2}{dx}$, correct to four decimal places.

PART-A

- 1) (a) What is pre decrement? How is it different from post decrement?
 (b) Difference between else if and switch constructs.
 (c) Write about recursive functions?
 (d) What is the difference between malloc () and calloc () ?
 (e) Explain about structures with syntax.
 (f) Write a short note on file operations.

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

PART-B

- 2) (a) Write about Algorithm and Flowchart with example.
 (b) Write type conversion with example program.
- 3) (a) Write about Multi-way selection statement? Explain with an example.
 (b) Write a c program for matrix multiplication with sufficient conditions.
- 4) (a) Explain about call by value and call by reference mechanisms.
 (b) Explain about different storage classes with examples along with scope rules.
- 5) (a) What is pointer? Write about dangling memory concept.
 (b) Write a program for command line arguments.
- 6) (a) How to define and initialize structures? How to access structure elements?
 (b) Write about unions and bitfields with examples.
- 7) (a) Write about text files , binary files and random files.
 (b) Write a program to copy contents of one file to another file.

[6+6]

[6+6]

[6+6]

[6+6]

[6+6]

[6+6]

PART-A

1. (a) Name any two coagulants.
- (b) Why PVC is soft and flexible whereas bakelite is hard and brittle ?
- (c) How is the deterioration of cement takes place ?
- (d) What is meant by passivity ?
- (e) Distinguish between gross and net calorific value of a fuel.
- (f) What is photo sensitization ?

PART-B

[2+2+2+2+2+2] 4 X 12 = 48

2. (a) What are the natural and synthetic zeolites ? Explain the zeolite process for the external treatment of boiler feed water and what are its limitations and advantages.
- (b) Write a brief account on breakpoint chlorination.

3. (a) Explain the functions of the different compounding materials added to plastic resins with suitable examples
- (b) What are plastics ? How are they classified ? Give an account of the bakelite plastic resin
- (c) What are biodegradable polymers and give their significance.

4. (a) Give an account of the different types of liquid crystals with suitable examples
- (b) Explain any two methods of green synthesis and its advantages

5. (a) What is the concept involved in fuel cells ? Describe the construction of $\text{CH}_3\text{OH-O}_2$ fuel cell and its working principle
- (b) Explain the factors which influence the rate of corrosion

6. (a) What is cracking ? Describe the fluidised bed catalytic cracking with a neat diagram
- (b) An oil on analysis gave the following results. C = 85 %, H = 12% and O = 3%. Find the weight of minimum air required for burning of 1 kg of fuel.

7. (a) Differentiate between fluorescence and phosphorescence. Explain the various applications of both the phenomenon.
- (b) Write short notes on
- (i) Stark Einstein law of photochemical equivalence
- (ii) Quantum yield

PART-A

1. (a) What is the role of Empathy in work place?
(b) Give two definitions of the word "Leader".
(c) Write about Whistle Blower.
(d) Define Copy right.
(e) Trade mark.
(f) Cyber law.

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

PART-B

4X 12 = 48

2. (a) Explain the need for Ethics as an engineer.
(b) Discuss the relation between character and the job of an engineer.
3. As an engineer do you feel that you can exhibit leadership skills? Elaborate your point with the help of an example.
4. (a) Discuss the responsibility of an engineer in preventing organizational crime.
(b) Cross cultural management in modern industrial times.
5. (a) Explain the evolution of IPR.
(b) Discuss the role of IPR in Innovations and Inventions.
6. (a) Discuss at length reg. TRIPS.
(b) Discuss the limitations of patent law.
7. Digitalization has increased cyber crime in India. Do you agree? Discuss your view point at length.



PART-A

1. (a) Define a conic.
- (b) Differentiate between the first and third angle of projections.
- (c) Draw the projections of a vertical line AB of 5cm long which is 30mm in front of VP and its one end being 20mm above HP.
- (d) A square plate of side 50mm is parallel to and 40mm above HP with all of its sides equally inclined to VP. Draw its projections.
- (e) What is a solid of revolution? Give examples.
- (f) Draw isometric view of a cube of 60mm long edge.

PART-B

2. An area of 50 sq.km of a field is represented by an area of 200sq.cm on a map. Determine the R.F. of the scale used in the map. Also construct a diagonal scale to show kilometres, hectometres and decametres. The maximum length on the scale is 10 km. Show a distance of 6.48 km on the scale.
3. (a) A point P is 40mm above HP and 30mm in front of VP. Draw its projections. Also find its shortest distance from the axis intersection of both HP and VP.
- (b) A line PQ of 60 mm long is parallel to and 40mm above HP while its front view measures 40mm. Its one end is 30mm in front of VP. Draw its projections and find its inclination with VP.
4. A line AB of 70 mm long is inclined at an angle of 60° to the HP and its top view is making an angle of 45° to the reference line. Its one end is 25mm above HP and 30mm in front of VP. Draw its projections and mark its traces. Also find its true inclination with VP.
5. One edge of a pentagonal plate of side 25 mm is on the H.P. and inclined at 60° to V.P. while its surface is making an angle of 45° to H.P. Draw its projections.
6. A cone of base diameter 60mm and axis 80mm long is lying on the VP with one of its generators. Its axis is parallel to and 50mm above the HP. Draw its projections
7. A hexagonal pyramid of base edge 25 mm and height 50 mm is placed centrally on the top of a circular disc of diameter 80 mm and thickness 20 mm. Two of the opposite edges of the hexagonal base of the pyramid are perpendicular to the V.P. The common axes are perpendicular to the H.P. Draw the isometric view of the combination of solids.

PART-A

1. (a) Draw a line 115mm long Quadrisect it
- (b) Draw the front view and top view of a point P 20 mm above the H.P and 25 mm behind the V.P.
- (c) A line AB 50 mm long is perpendicular to V.P. and parallel to H.P. Its end A is 20 mm in front of V.P. and the line is 40 mm above H.P. Draw the projections of the line.
- (d) A Pentagonal lamina of side length 35 mm its surface is perpendicular to H.P and parallel to V.P. Draw its projections.
- (e) Draw the projections of a cone base diameter 40 mm, axis 80 mm long, its base is resting on V.P.
- (f) A cylinder of base 50mm diameter and axis 70 mm long is laying on HP. Draw its isometric view when axis is horizontal.

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

PART-B

2. (a) The foci of an ellipse are 90mm apart and the minor axis is 65mm long. Find the length of the major axis and draw the ellipse by concentric circles method
- (b) Construct a diagonal scale 1/50, showing metres, decimetres and centimetres, to measure up to 5 metres. Mark a length 4.75 m on it.

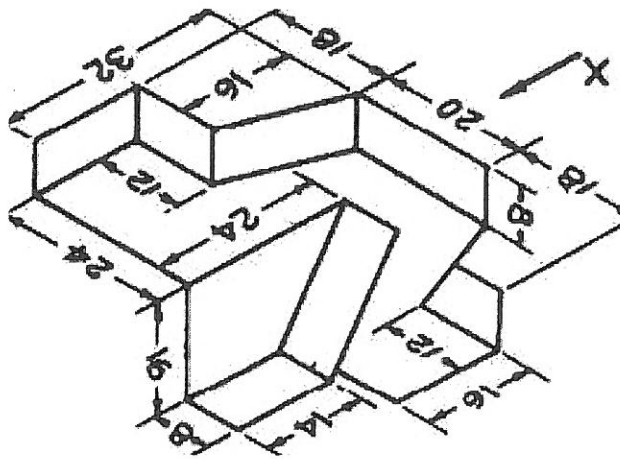
3. (a) Two points A and B are in the H.P. The point A is 30mm in front of the V.P., while B is behind the V.P. The distance between their projectors is 75mm and the line joining their top views makes an angle of 45° with xy. Find the distance of the point B from the V.P.
- (b) The length of the top view of a line parallel to the V.P. and inclined at 45° to the H.P. is 50mm. one end of the line is 12mm above the H.P. and 25mm in front of the V.P. Draw the projections of the line and determine its true length

4. A line AB, 65mm long, has its end A 20mm above the H.P. and 25mm in front of the V.P. The end B is 40mm above the H.P. and 65mm in front of the V.P. Draw the projections of AB and show its inclinations with the H.P. and the V.P.

5. Draw the projections of a regular hexagon of 30mm side having one of its sides in the H.P. and inclined at 60° to the V.P. and its surface making an angle of 45° with the H.P.

6. Draw the projections of a pentagonal prism, base 30 mm side and axis 50 mm long, resting on one of its rectangular faces on the H.P., with the axis inclined at 45° to the V.P.

7. Draw the (i) Front view and (ii) Top view and (iii) Side view for the following figure



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) Distinguish between polarized and unpolarized light.
 (b) What are Einstein coefficients A and B in laser?
 (c) Write the lattice parameters for Triclinic crystal.
 (d) Write the applications of ultrasonic waves.
 (e) Define density of states. What is its use?
 (f) What is Hall effect? Give the expression for Hall coefficient.

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

2. (a) Explain the interference of light due to thin films.
 (b) Explain with theory how wavelength of spectral line is determined using plane diffraction grating?

[6+6]

3. (a) What are the requirements of a Laser? With a neat sketch, describe the construction and working of He-Ne Laser.
 (b) Define acceptance angle of a fiber? Derive an expression for it.

[6+6]

4. (a) Describe seven crystal systems with diagrams.
 (b) Define Miller indices. Sketch the following atomic planes in a simple cubic structure (010), (110) and (111)

[6+4]

5. (a) Explain the production of ultrasonics using magnetostriction method.
 (b) What are the basic requirements of acoustically good hall?
 (c) An auditorium has a volume of 5000 m^3 . What should be the total absorption in the hall if the reverberation time of 1.25 sec is to be maintained?

[6+4+2]

6. (a) Explain the salient features of classical free electron theory.
 (b) Derive time independent Schrodinger's wave equation. What is the physical significance of wave function used in the above equation?

[6+6]

7. (a) Discuss the Kronig Penny model for the motion of an electron in a periodic potential.
 (b) Distinguish between intrinsic and extrinsic semiconductors with suitable examples.

[6+6]

PART-A

1. (a) What are the contributions made by the following -WII,NEERI & Rajendra Singh.
 (b) Write about waterlogging and salinity?
 (c) Write about ecosystem diversity?
 (d) List common sources and effects of noise pollution?
 (e) Explain Waste land reclamation?
 (f) Write about ecotourism?

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

PART-B

2. (a) Describe food chain and food web with examples?
 (b) Write about ecological succession?
 6m
3. (a) What is the role of an individual in conservation of natural resources?
 (b) Discuss about man induced landslides and its effects with case study?
 6m
4. (a) What are the values of biodiversity? Explain them.
 (b) Explain about conservation of biodiversity?
 6m
5. (a) Define air pollution. What are its impacts on human health?
 (b) What are the control measures used for controlling soil pollution?
 6m
6. (a) Discuss the causes and effects of global warming?
 (b) Discuss the salient features of wild life(Protection)Act,1972?
 6m
7. Explain EIA methodologies?
 12m

4X 12 = 48



Subject Code: R16CS1110

I B.Tech I Semester Supplementary Examinations, May-2018.
INTRODUCTION TO COMPUTERS AND PROBLEM SOLVING
 (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) Match the following devices with the word that best describes their function e.g. keyboard equals input. You can use words more than once.
 - i. Hard disk
 - ii. Mouse
 - iii. Printer
 - iv. Scanner

- b) Name the things which are contained on the motherboard of a computer
- c) Convert $(145.125)_{10}$ into $(?)_2$

- d) Mention the standard conventions of drawing a flowchart

- e) How to convert character to number

- f) What is histogramming.

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

PART-B

2. a) Explain different types of computers in detail.
 b) List the different applications of computers
3. a) What is Rom? Describe its various types
 b) Draw the hard disk structure and explain in detail
4. a) Find the octal equivalent of the following binary numbers
 i) 1101011 ii) 11010 iii) 10110011 iv) 11011101 v) 1110101 vi) 1000
 b) Convert following decimal numbers to binary
 i) 435 ii) 1694 iii) 32
 a) Draw a flowchart to sine function computation
 b) Write an algorithm for factorial computation
5. a) Write an algorithm and draw a flowchart to computing the prime factors of an integer
 b) Write an algorithm for smallest divisor of an integer
6. a) What is array? Write an algorithm for finding maximum number in a set
 b) Write an algorithm for greatest common divisor of integers
7. a) What is array? Write an algorithm for finding maximum number in a set
 b) Write an algorithm for greatest common divisor of integers

[6+6]

[6+6]

[6+6]

[4+4+4]

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

[5+7]

[7+5]
