MALLA REDDY UNIVERSITY

Telangana State Private Universities (Establishment and Regulations) (Amendment) Act No.13 of 2020
G.O.No.Ms.14, Higher Education (UE) Department, Telangana State
Maisammaguda, Kompally, Hyderabad – 500 100

Computer Science and Engineering

R20 Regulations

I Year B. Tech– I Semester

QUESTION BANK

MALLA REDDY UNIVERSITY

Computer Science and Engineering
R20 Regulations

I Year B. Tech– I Semester Subjects

S.No	Subject Code	Subject
1	MR20-1HS0101	English
2	MR20-1BS0101	Mathematics – I
3	MR20-1ES0101	Basic Electrical and Electronics Engineering
4	MR20-1ES0102	Programming for Problem Solving
5	MR20-1BM0161	Financial Institutions, Markets and services
6	MR20-1HS0132	Foreign Language French

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(Telangana State Private Universities Act No.13 of 2020 and G.O.Ms.No.14, Higher Education (UE) Department)
Maisammaguda,Dulapally,Hyderabad 500100. TS., India.

Department of English Question Bank (CSE-GEN, AIML, CS & DS)

UNIT - I

1.
   a) Analyze critically the significance of India and its heritage, with reference to the poem.
   b) When you say 'We All Are Indians First', what are your responsibilities and contributions towards the country?

2.
   a) Explain the following reading techniques:
   Survey – Question – Read – Recite - Review
   b) Define phrases, clauses and sentences using two examples for each?

3.
   a) What is the central idea of the poem 'We All Are Indians First'?
   b) The poet says, 'Diversity is our culture'. Justify.

4.
   a) Expand the proverb 'Action speaks louder than words' in your own perspective with appropriate examples.
   b) Write a conversation among your friends discussing tomorrow's WIPRO job fair in our campus.

5.
   a) Write a brief note on the Guru-disciple tradition of our country, with reference to a few successful Guru-pupil duos.
   b) What does 'rest is rust' in the context of the poem 'We All Are Indians First'?

6.
   a) Define a role play.
   b) Write at least 5 dialogues each for the following situation creating a role play.
   Bring the typographical errors on your ID card to the notice of your HOD.

UNIT - II

7.
   a) Write the merits and demerits of the education scenario in India today, based on the story 'The Cut-off'.
   b) 'Gautam, relax. That paper is done. And sticklers don't do well in life. Innovative and Imaginative will do.' Do you agree with this statement? Justify.

8.
   a) What are the non-verbal signals that we could identify for good comprehension in reading?
   b) Make précis and give suitable title for the following paragraph.

The friendliness of dolphins have always been believed to be superior to that of humans. They are even supposed to be more intelligent and superior than mankind, but lack behind due to their weak physical strength. Further, their benevolent character can be witnessed in their communication process and gestures they showcase towards other dependable members of the community.

9.

a) Who is the narrator of the story 'The Cut-off'? Why does he decide to end his life?
b) In the light of the story, discuss the role of parents in nurturing children who cannot handle stress in their life.

10.

a) Examine the story 'The Cut-off' as a statement of frustration on the part of the youth of our country.
b) What are the important points in the letter that Goutam Arora addresses to the Education Minister?

11.

a) Define Homophones and Homographs with five examples each.
b) What can be inferred from the following paragraph about Science:

People are always less happy to accept scientific data; they feel, science contradicts their preconceived beliefs. No surprise here; no human likes to be wrong. But science isn't supposed to care about preconceived notions. Science, at least, good science tells us about the world as it is, and not as some wish it to be. Sometimes what science finds is consistent with a particular religion's wishes. But usually, it is not.

12.

a) In the lesson the 'Cut-off', what made Gautam take back his decision of ending his life?
b) Gautam's father provides certain logic while illustrating the point that admission in a good college need not necessarily ensure good education to all. Do you agree with Gautam's father? Justify.

UNIT – III

13.

a) What are the unique selling points of Microsoft, according to Nadella?
b) What are the three factors that Nadella lists as his formative influences?

14.

a) Skim, scan and answer the questions that follow the passage:

Seagulls live on the beach. They eat small fish, bread, and seaweed. Seagulls run quickly on the sand and fly quickly in the sky. Seagulls will run or fly away if you try to catch them. There are many seagulls on the beach.Crabs also live on the beach. They eat shrimp, ocean plants, and small fish. Crabs crawl quickly onthe sand and in the ocean. Crabs will crawl away if you try to catch them. There are many crabs on the beach, but it is not always easy to see them.Starfish live on the beach, too. They eat clams, oysters, and small fish. Starfish move slowly on the sand and in the ocean. Starfish will not move away if you try to catch them. There are few starfish on the beach.

1) Seagulls, crabs, and starfish all eat
   A.clams B.bread C.fish
2) Which animal does notmove quickly?
   A.starfish B.seagulls C.crabs
3) Based on information in the passage, which sentence is false?
   A.Starfish are hard to catch.
   B.Crabs eat shrimp and ocean plants.
   C.Seagulls move quickly on the sand and in the air.
4) The passage does not talk about
   A.what starfish eat
   B.how crabs catch food
   C.how fast beach animals move
5) Based on information in the passage, which animal would you be most likely to see at the beach?
   A.crabs B.seagulls C.starfish

b) Write a formal letter to the HOD, CSE Department, seeking permission to participate in a two Day International Seminar at BITS PILANI, Hyderabad Campus.

15.

a) Why did Nadella believe that Microsoft was the best company in the world?
b) What did Nadella mean by "Microsoft does not believe in tradition, it believes in innovation."?

16.

a) Write an e-mail for the following situation:

You are a former student of Mr. Smith. Thank your professor for his guidance that contributed to your success.

b) Can, Shall, Will, May – explain where and how these model auxiliaries are used with suitable examples.

17.

a) What is Nadella's strategy for Microsoft as it steps into the new decade?
b) How would evolving technology make an impact on the lives of common people? How can Microsoft contribute to this?

18.

a) What do the interviewers test in the group discussion during job interviews?
b) Identify the tense in the following sentences and explain when and where those tenses are used:
   1. I visited Birla Mandir yesterday.
   2. I have visited Birla Mandir recently.

UNIT – IV

19.

a) What was the effect of Antony's oration on the crowd?
b) Sketch the character of Brutus?

20.

c) Write a paragraph about your memorable trip/tour.
d) Write an Essay on "Technology is a boon or bane"?

21.

a) How does Brutus justify his assassination of Caesar?
b) What did Mark Antony say in his speech?

22.

a) Do as directed
   i. We have done our homework. (change into Passive Voice)
   ii. Did Sue draw this circle? (change into Passive Voice)
   iii. This portrait was painted by my grandmother. (change into Active Voice)
   iv. Post the letter. (change into Passive Voice)
   v. She has been sacked. (change into Active Voice)

b) Expand the proverb "An investment in knowledge pays the best interest".

23.

a) Sketch the character of Antonio.
b) What are the similarities in the two orations you have read in this lesson?

a) Write a paragraph on importance of 'English'.
b) Read the following passage and answer the questions that follow:

Naval architects never claim that a ship is unsinkable, but the sinking of the passenger-and-car ferry Estonia in the Baltic surely should have never have happened. It was well designed and carefully maintained. It carried the proper number of lifeboats. It had been thoroughly inspected the day of its fatal voyage. Yet hours later, the Estonia rolled over and sank in a cold, stormy night. It went down so quickly that most of those on board, caught in their dark, flooding cabins, had no chance to save themselves: Of those who managed to scramble overboard, only 139 survived. The rest died of hypothermia before the rescuers could pluck them from the cold sea. The final death toll amounted to 912 souls. However, there were an unpleasant number of questions about why the Estonia sank and why so many survivors were men in the prime of life, while most of the dead were women, children and the elderly.

1. Give the suitable title for the above passage.
2. Why does the writer think that the passenger-and-car ferry Estonia cannot sink?
3. One can understand from the reading that ----.

- A) the lifesaving equipment did not work well and lifeboats could not be lowered
- B) design faults and incompetent crew contributed to the sinking of the Estonia ferry
- C) 139 people managed to leave the vessel but died in freezing water
- D) naval architects claimed that the Estonia was unsinkable
- E) most victims were trapped inside the boat as they were in their cabins

4. It is clear from the passage that the survivors of the accident ----.

- A) helped one another to overcome the tragedy that had affected them all
- B) were mostly young men but women, children and the elderly stood little chance
- C) helped save hundreds of lives
- D) are still suffering from severe post-traumatic stress disorder
- E) told the investigators nothing about the accident

5. According to the passage, when the Estonia sank, ----.

- A) there were only 139 passengers on board
- B) few of the passengers were asleep
- C) there were enough lifeboats for the number of people on board
- D) faster reaction by the crew could have increased the Estonia's chances of survival
- E) all the passengers had already moved out into the open decks

24.

a) **Make notes for the following extract:**

Samoa is rapidly being modernized. Improvements include new roads, an up-to-date communications system, a big new tourist hotel, a radio station and a sawmill. These changes are bringing foreign investors and advisers flooding into Samoa, and European-style houses are appearing everywhere. On the other hand, many young Samoans are leaving for New Zealand. The money they send home is changing the country's economy, causing neglect of agriculture and inflation. Economic changes seem likely to be followed by political changes.

b) Prepare a speech (Public Speaking) on ‘Farmers’ bill in India’.

UNIT – V

25.

a) Write a wonderful paragraph about your Role Model.
b) “Which is more important? Hard work or Talent?” develop a debate.

26.

a) Fill in the blanks with suitable conditionals:
   1. If I were you, I _____ (forgive) him.
   2. If they had instructed us properly, we _____ (attend) the conference earlier.
   3. If you _____ (ask) me, I will help you.
   4. If Smitha received a mail, she _____ (intimate) them.
   5. If we _____ (know), we would have prepared well.

b) Write the meaning for the following Technical words and use them in a sentence:

1. Debug
2. Firewall
3. GPS
4. Icon
5. Wifi

27.

a) Develop a debate on 'video games and their effects on youth'.

b) Read the following passage and answer the questions that follow:

Philosophy of Education is a label applied to the study of the purpose, process, nature and ideals of education. It can be considered a branch of both philosophy and education. Education can be defined as the teaching and learning of specific skills, and the imparting of knowledge, judgment and wisdom, and is something broader than the societal institution of education we often speak of.

Many educationalists consider it a weak and woolly field, too far removed from the practical applications of the real world to be useful. But philosophers dating back to Plato and the Ancient Greeks have given the area much thought and emphasis, and there is little doubt that their work has helped shape the practice of education over the millennia.

Plato is the earliest important educational thinker, and education is an essential element in "The Republic" (his most important work on philosophy and political theory, written around 360 B.C.). In it, he advocates some rather extreme methods: removing children from their mothers' care and raising them as wards of the state, and differentiating children suitable to the various castes, the highest receiving the most education, so that they could act as guardians of the city and care for the less able. He believed that education should be holistic, including facts, skills, physical discipline, music and art. Plato believed that talent and intelligence is not distributed genetically and thus is be found in children born to all classes, although his proposed system of selective public education for an educated minority of the population does not really follow a democratic model.

Aristotle considered human nature, habit and reason to be equally important forces to be cultivated in education, the ultimate aim of which should be to produce good and virtuous citizens. He proposed that teachers lead their students systematically, and that repetition be used as a key tool to develop good habits, unlike Socrates' emphasis on questioning his listeners to bring out their own ideas. He emphasized the balancing of the theoretical and practical aspects of subjects taught, among which he explicitly mentions reading, writing, mathematics, music, physical education, literature, history, and a wide range of sciences, as well as play, which he also considered important.

During the Medieval period, the idea of Perennialism was first formulated by St. Thomas Aquinas in his work "De Magistro". Perennialism holds that one should teach those things deemed to be of everlasting importance to all people everywhere, namely principles and reasoning, not just facts (which are apt to change over time), and that one should teach first about people, not machines or techniques. It was originally religious in nature, and it was only much later that a theory of secular perennialism developed.

During the Renaissance, the French skeptic Michel de Montaigne (1533 - 1592) was one of the first to critically look at education. Unusually for his time, Montaigne was willing to question the conventional wisdom of the period, calling into question the whole edifice of the educational system, and the implicit assumption that university-educated philosophers were necessarily wiser than uneducated farm workers, for example.

Q1. What is the difference between the approaches of Socrates and Aristotle?

1)Aristotle felt the need for repetition to develop good habits in students; Socrates felt that students need to be constantly questioned

2)Aristotle felt the need for rote-learning; Socrates emphasized on dialogic learning

3)There was no difference

4)Aristotle emphasized on the importance of paying attention to human nature; Socrates emphasized upon science

Q2.Why do educationists consider philosophy a "weak and woolly" field?

1)It is not practically applicable
2)Its theoretical concepts are easily understood
3)It is irrelevant for education
4)None of the above

Q3.What do you understand by the term 'Perennialism', in the context of the given comprehension passage?

1)It refers to something which is of ceaseless importance
2)It refers to something which is quite unnecessary
3)It refers to something which is abstract and theoretical
4) It refers to something which existed in the past and no longer exists now

Q4.Were Plato's beliefs about education democratic?

1)He believed that only the rich have the right to acquire education
2)Yes
3)He believed that only a select few are meant to attend schools
4) He believed that all pupils are not talented

Q5.Why did Aquinas propose a model of education which did not lay much emphasis on facts?

1)Facts are not important
2)Facts do not lead to holistic education
3)Facts change with the changing times
4)Facts are frozen in time

28.

a) What does the acronym S.M.A.R.T stand for? Elaborate its relevance with goal setting.
b) Write a brief note on how you have adapted yourself to the university environment.

29.

a) How do you apply the soft skill 'First things first' in your life.
b) What are the important steps to make a Career Plan?

30.

a) Write a paragraph on a 'Mother's role in a family'.
b) Explain the dos and don'ts of Debate.

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Question Bank of Mathematics –I

Problems for Practice Prepared by Department of Mathematics

(School of Sciences)

UNIT-I

MATRICES THEORY

1. a) Discuss for all values of λ the system of equations $x + y + 4z = 6,\ x + 2y - 6z = 6,$ $\lambda x + y + z = 6$ with regard to consistence.

   b) Find the values a & b for which the equations $x + y + z = 3, x + 2y + 2z = 6, x + ay + 3z = b$ case (i) No Solution (ii) a unique solution (iii) infinite no. of solutions.

2. a) Determine a, b, c values when $\begin{bmatrix} 0 & 2b & c \\ a & b & -c \\ a & -b & c \end{bmatrix}$ is orthogonal

   b) If 2,3,5 are the eigen values of a matrix A the eigen values of $2A^3 + 3A^2 + 5A + 3I$.

3. a) Find the rank of the matrix $\begin{bmatrix} -1 & -3 & 3 & -1 \\ 1 & 1 & -1 & 0 \\ 2 & -5 & 2 & -3 \\ -1 & 1 & 0 & 1 \end{bmatrix}$ by reducing it to normal form.

   b) Find the rank of the matrix $A = \begin{bmatrix} 2 & 3 & -1 & 1 \\ 1 & -1 & -2 & -3 \\ 3 & 1 & 3 & -2 \\ 6 & 3 & 0 & 7 \end{bmatrix}$ by reducing into the normal form.

4. a) Show that the system of equations $2x_1 - 2x_2 + x_3 = \lambda x_1, 2x_1 - 3x_2 + 2x_3 = \lambda x_2, -x_1 + 2x_2 = \lambda x_3$, composses a non-trivial solutions only if λ=1, λ=-3.

   b) If $a + b + c \neq 0$, show that the system of equations:

   $$-2x + y + z = a, x - 2y + z = b, x + y - 2z = c$$

   has no solution If a+b+c=0, show that it has infinitely many solutions.

c) Solve the system $\lambda x + y + z = 0, x + \lambda y + z = 0, x + y + \lambda z = 0$, if the system has non-zero solutions.

5. a) Determine the modal matrix P for $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$ and hence diagonalize A.

   b) Find a matrix P which transforms the matrix $A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$ to diagonal form

6. a) Determine the diagonal matrix orthogonally similar to the following symmetric matrix $A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$.

   b) Determine the model matrix P of $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ verify that $P^{-1}AP$ is a diagonal matrix.

7. a) Show that matrix $A = \begin{bmatrix} 0 & c & -b \\ -c & 0 & a \\ o & -a & 0 \end{bmatrix}$ satisfies Cayley Hamilton theorem.

   b) If $A = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 2 & 1 \\ -4 & 4 & 3 \end{bmatrix}$ using Cayley Hamilton theorem find a) A^{-1} b)A^4

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Problems for Practice

UNIT-II : DIFFERENTIAL CALCULUS-1

1. A) State Rolle's theorem and Lagrange's theorem, give an geometrical interpretation.

   B) State Cauchy's mean value theorem.

2. A) Verify Rolle's theorem for $f(x) = |x| \; in \;\; [-1,1]$

   B) Verify Rolle's theorem for $f(x) = \sin x - \sin 2x \;\; on \;\; [0, \pi]$

   C) Verify Rolle's theorem for $f(x) = \sqrt{x(1-x)} \;\; on \;\; [0,1]$

3. A) Verify Lagrange's theorem for $f(x) = (x-1)(x-2)(x-3) \; on \;\; [0,4]$

   B) Verify Lagrange's theorem for $f(x) = \log_e x \;\; on \;\; [1, e]$

4. A) Find the value of c of Cauchy's mean value theorem for

$f(x)=\sqrt{x}$ *and* $g(x)=\frac{1}{\sqrt{x}}$ *in* $[a,b], 0<a<b$

B) Verify Cauchy's mean value theorem for $f(x)$ and $f^1(x)$ in $[1,e]$ given $f(x)=\log x$

C) Apply CMVT to the function $f(x)=e^x$ *and* $g(x)=e^{-x}$ *in the* int*erval* $[a,b]$

5. A) Show that, for any $x>0$, $1+x<e^x<1+xe^x$

B) For $0<a<b$ prove that $1-\frac{a}{b}<\log\left(\frac{b}{a}\right)<\frac{b}{a}-1$. Hence prove that $\frac{1}{6}<\log\left(\frac{6}{5}\right)<\frac{1}{5}$

6. A) Prove that by using Lagrange's Mean Value theorem $\frac{b-a}{1-a^2}<Sin^{-1}b-Sin^{-1}a<\frac{b-a}{1-b^2}$

and hence deduce that $\frac{\pi}{6}-\frac{1}{2\sqrt{3}}<\sin^{-1}\frac{1}{4}<\frac{\pi}{6}-\frac{1}{\sqrt{15}}$

B) If $a<b$ prove that $\frac{b-a}{1+b^2}<\tan^{-1}b-\tan^{-1}a<\frac{b-a}{1+a^2}$ using Lagrange's mean value theorem. Deduce the following $\frac{\pi}{4}+\frac{3}{25}<\tan^{-1}\frac{4}{3}<\frac{\pi}{4}+\frac{1}{6}$, $\frac{5\pi+4}{20}<\tan^{-1}2<\frac{\pi+2}{4}$

C) Prove that $\frac{\pi}{3}-\frac{1}{5\sqrt{3}}>\cos^{-1}\frac{3}{5}>\frac{\pi}{3}-\frac{1}{8}$ using Lagrange's theorem.

7. A) If $f(x)=\sqrt{x}$ *and* $g(x)=\frac{1}{\sqrt{x}}$, Prove that C of Cauchy's mean value is geometric mean between a and b, $a>0, b>0$.

B) Using Cauchy's theorem prove that $\frac{\sin\alpha-\sin\beta}{\cos\beta-\cos\alpha}=\cot\theta, 0<\alpha<\theta<\beta<\frac{\pi}{2}$

8. A) Verify Rolle's Theorem for $f(x)=\log\left(\frac{x^2+ab}{(a+b)x}\right)$ in [a, b].

B) Verify Rolle's theorem for $f(x)=x(x+3)e^{-\frac{x}{2}}$ *in* $-3 \le x \le 0$

9. A) Expand $\log_e^x$ in powers of $(x-1)$ and hence evaluate $\log_e^{(1.1)}$ correct to 4 decimal places.

   B) Find a point on the curve $y=x^2$ tangent at which is parallel to the chord joining the points (1,1) and (3,9)

   C) Find the Maclaurin's theorem with Lagrange's from of remainder for $f(x)=\cos x$

   D) Expand $e^{\sin x}$ by Maclaurin's series or otherwise upto the term containing x^4

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Problems for Practice

UNIT-III: DIFFERENTIAL CALCULUS-II

1. A) Determine whether the following function is functionally dependent or not. If functionally dependent find the relationship between them $u=\frac{x^2-y^2}{x^2+y^2}, v=\frac{2xy}{x^2+y^2}$

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

2. A) If $r^2=x^2+y^2+z^2$ and $u=r^m$ then prove that $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}+\frac{\partial^2 u}{\partial z^2}=m(m+1)r^{m-2}$

   B) If $u^3+xv^2-uy=0, u^2+xvy+v^2=0$ find $\frac{\partial u}{\partial x},\frac{\partial v}{\partial x},\frac{\partial u}{\partial y},\frac{\partial v}{\partial y}$

3. A) If $u=x+y+z, y+z=uv, z=uvw$ show that $\frac{\partial(x,y,z)}{\partial(u,v,w)}=u^2v$

   B) $If\ x+y+z=u, y+z=uv, z=uvw, then\ evaluate\ \frac{\partial(x,y,z)}{\partial(u,v,w)}$

   C) $If\ x^xy^yz^z=e\ show\ that\ at\ x=y=z, \frac{\partial^2 z}{\partial x\partial y}=-(xlogex)^{-1}$

   D) $If\ U=\log(x^3+y^3+z^3-3xyz), prove\ that\ \left(\frac{\partial}{\partial x}+\frac{\partial}{\partial y}+\frac{\partial}{\partial z}\right)^2 U=\frac{-9}{(x+y+z)^2}$

4. A) Determine maximum and minimum of $f(x,y) = -x^3 + 4xy - 2y^3 + 1$.

   B) If $u = x^2 - 2y,\ \ v = x + y + z,\ \ w = x - 2y + z$ then compute $\frac{\partial(u,v,w)}{\partial(x,y,z)}$

   C) Show that the functions $u = x + y + z, v = xy + yz + zx, w = x^2 + y^2 + z^2$ are functionally dependent and if so, find the relation between them.

   D) Evaluate $\frac{\partial(u,v)}{\partial(r,\theta)}$ if $u = 2axy$, $v = a\left(x^2 - y^2\right)$ where $x = r\cos\theta$ and $y = r\sin\theta$

5. A) Expand $f(x,y) = \tan^{-1}\left(\frac{y}{x}\right)$ in powers of $(x-2)$ and $(y+1)$ up to terms of third degree.

   B) Apply Taylor's series to expand $f(x,y) = x^2 - xy + y^2$ in powers of $(x+1)$ and $(y-2)$.

6. A) An open rectangular fish tank is to have a volume of 13.5m. Determine the least surface area of glass required.

   B) Divide 24 into three parts such that the continued product of the first, square of second and cube of third is maximum.

7. A) Find the maximum and minimum values of $x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x.$

   B) Examine the extreme of $f(x,y) = x^2 + xy + y^2 + \frac{1}{x} + \frac{1}{y}$

   C) Find the maximum and minimum values $x + y + z$ subject to $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 1$

   D) Find the volume of the largest rectangular parallelepiped that can be inscribed in the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$

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Problems for Practice

UNIT-IV: FIRST ORDER ORDINARY DIFFERENTIAL EQUATIONS

1. A) Solve $(\cos x - x\cos y)dy - (\sin y + y\sin x)dx = 0$

   B) A body cools from 60^0C to 50^0C in 10 minutes when kept in air at 30^0C in the next 10 minutes what is the temperature of the body.

2. A) Solve $\left(1+e^{\frac{x}{y}}\right)dx + e^{\frac{x}{y}}\left(1-\frac{x}{y}\right)dy = 0$

   B) The number of bacteria culture grows at the rate proportional to N, the value of N was initially 100 and it increases to 332 in one hr. What would be the value of N after $1\frac{1}{2}hr$

3. A) Solve $\frac{dy}{dx} + y\sec^2 x = \tan x \sec^2 x$

   B) If 30% of radioactive substance disappear in 10 days. How long will it take for 90% of it to disappear.

4. A) Solve $\frac{dy}{dx} + \frac{3x^2}{1+x^3}y = \frac{\sin^2 x}{1+x^3}$.

   B) Show that the family of con-focal conics $\frac{x^2}{a^2+\lambda} + \frac{y^2}{b^2+\lambda} = 1$ is self orthogonal.

5. A) Solve $\frac{dy}{dx} + y\tan x = x^m \cos x$

   B) If radioactive carbon-14 has a half life of 5750 years, what will remain of 1 gram after 3000 years?

6. A) Solve $x\frac{dy}{dx} + y = x^2 + 3x + 2$

   B) Find the orthogonal trajectories of the family of curves $r^n = a^n \cos n\theta$

7. A) Solve $\left(x + 2y^3\right)\frac{dy}{dx} - y = 0$

   B) Suppose that an object is heated to 300F and allowed to cool is a room whose air temperature 20F, it after 10 min, the temperature of the object is 250F, what will be its temperature after 20 min?

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Problems for Practice

UNIT-V : HIGHER ORDER ORDINARY DIFFERENTIAL EQUATIONS

1. A) Solve $\left(D^2-2D+1\right)y = xe^x \sin x$

   B) Solve $\left(D^2-2D\right)y = e^x \sin x$ by the method of variation of parameters.

2. A) Solve $\frac{d^2y}{dx^2}+4\frac{dy}{dx}+5y=-2\cosh x$ *Also find when* $y=0, \frac{dy}{dx}=1 at\ x=0$

   B) Solve $\frac{d^2y}{dx^2}-\frac{1}{x}\frac{dy}{dx}+\frac{y}{x^2}=\frac{2\log x}{x^2}$.

3. A) Solve $\left(D^2-4D+4\right)y = 8x^2e^{2x}\sin 2x$

   B) Solve $y''-6y'+9y=\frac{e^{3x}}{x^2}$ by the method of variation of parameter.

4. A) Solve $\frac{d^2x}{dt^2}+n^2x=k\cos(nt+\alpha)$

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

5. A) Solve $\frac{d^4x}{dt^4}+2\frac{d^2x}{dt^2}+x=t^2\cos t$

   B) Determine the charge on the capacitor in an *LRC* series circuit at when *inductance* 1 H, resistance 7Ω, capacitance 0.1 F, $E(t)= e^t$ V, $q(0)$ =2 C, and $i(0)$ =0 A.

6. A) Solve $\left(D^2+1\right)y = x^2e^{3x}$

   B) Solve by the method of variation of parameters $\frac{d^2y}{dx^2}-y=\frac{2}{\left(1+e^x\right)}$.

7. A) Solve $\left(D^2-2D+2\right)y = e^x\tan x$.

   B) Determine charge q and current i in the LRC circuit with inductance 0.5H, resistance 6 ohms, *capacitance* (1/16)F, E(t) = sinht, and the initial conditions are q(0)=0, i(0)=1.

8. A) *Solve* $\left(D^2-3D+2\right)y=\sin\left(e^{-x}\right)$ B) Solve $x^3\frac{d^3y}{dx^3}+2x^2\frac{d^2y}{dx^2}+2y=10\left(x+\frac{1}{x}\right)$

*** PRACTICE MAKES MAN PERFECT ***

*** Intelligence may FAIL sometimes, But HARDWORK Never FAIL ***

*** ALL THE BEST ***

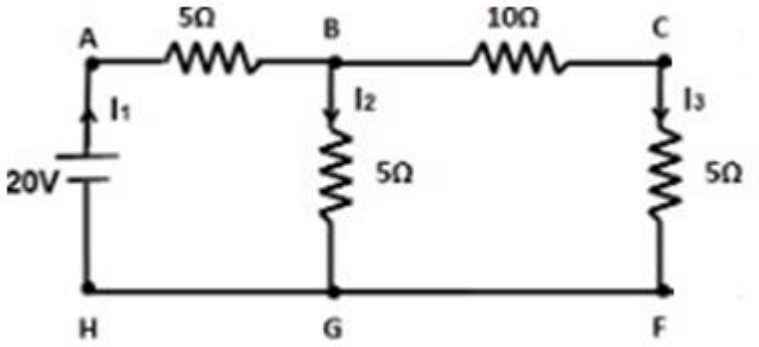
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTION BANK

UNIT-I

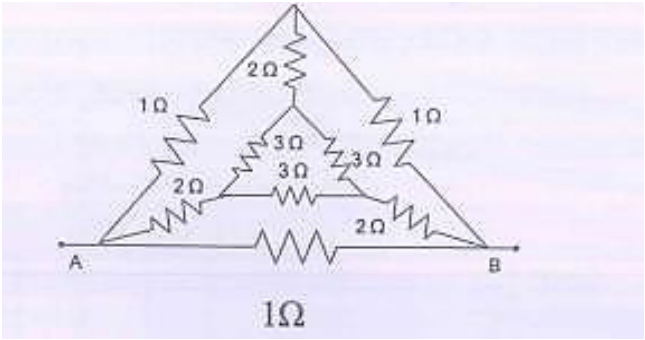
1. Explain about the Independent and Dependent sources in detail.

2. a) State and explain Kirchhoff's laws with examples.
   b) Find the current flowing through 10Ω resistor using KVL and KCL in the following circuit.

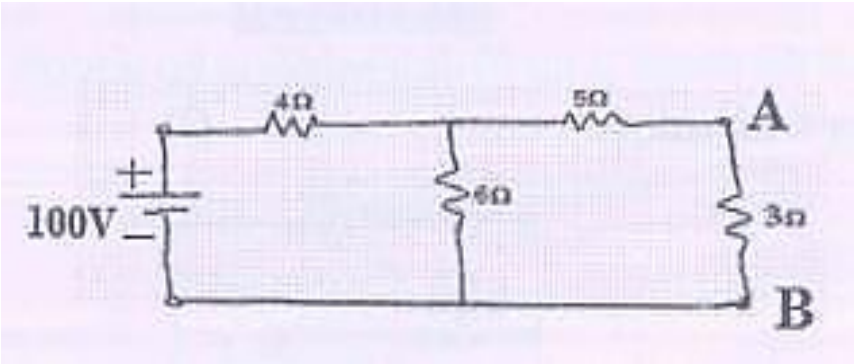


3. Derive necessary expressions for star to delta and delta to star transformation.

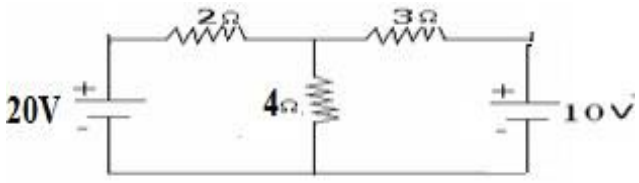
4. Determine the equivalent resistance across AB terminals.



5. a) State and explain Thevenin's theorem with an example.
   b) Determine the current through 3 ohms resistor using Thevenin's theorem.



6.a) State and explain superposition theorem with an example
b) Find the current through 4 ohms resistor by using superposition theorem.



UNIT-II

1. Explain the principle of operation of DC generator.

2. Explain the principle of operation of DC motor.

3. Explain the Constructional features of a DC machine with a neat sketch.

4. a) Derive the EMF equation of DC generator.
   b) The armature of a 4-pole D.C. generator has a lap winding containing 600 conductors. Calculate the generated EMF when the flux per pole is 0.06 Wb and the speed is 400 rpm.

5. a) Derive the torque equation of DC motor.
   b) DC motor takes an armature current of 110A at 480V.The armature circuit resistance is 0.2 ohms. The machine has 6 poles and the armature is lap connected with 864 conductors. The flux per pole is 0. 05wb.Caluclate (i) The speed (ii) The gross torque developed by the motor.

6. Explain about speed control methods of DC Shunt Motor.

UNIT-III

1. a) Derive the EMF equation of transformer.
   b) An ideal 25KVA transformer has 500 turns on the primary winding and 40 turns on the secondary winding. The primary is connected to 3000V, 50Hz supply. Calculate (i) The secondary EMF (ii) The maximum flux in the core (iii) The primary and secondary currents.

2. a) Explain about the working principle and operation of single-phase Transformer.
   b) Explain about the construction of single-phase Transformer.

3. a) Explain working principle and operation of Induction motor.
   b) Explain working principle and operation of Alternator.

4.a) Explain about squirrel cage and slip-ring induction motors.
b) Explain about Salient pole and cylindrical rotor alternators.

5. Explain about the construction of Induction motor.

6. Explain about the construction of Alternator.

UNIT-IV

1. a) Explain the construction, operation and V-I characteristics of P-N Junction diode.
   b) Explain the construction, operation and V-I characteristics of Zener diode.

2. a) Explain the construction and operation of NPN transistor.
   b) Explain the construction and operation of PNP transistor.

3. Explain about Avalanche and Zener Breakdown Mechanisms.

4. a) Explain the operation and Input and Output characteristics of BJT in CB configuration.
   b) In a common base connection, the emitter current is 1mA. If the emitter circuit is open, the collector current is 50uA.Find the total collector current. Given that $\grave{\alpha}$=0.92.

5. Explain the operation and Input and Output characteristics of BJT in CE configuration.

6. a) Explain the operation and Input and Output characteristics of BJT in CC configuration.
   b) Find the values of β and γ, if (i) $\grave{\alpha}$=0.9 (ii) $\grave{\alpha}$=0.98.

UNIT-V

1. Explain various number systems and codes and their conversion with examples for each.

2. Write the truth table and symbols of AND, OR, NOT, NAND and NOR gates.

3. a) Find the 9's compliment of the numbers 12345678, 87654321.
   b) Find the 10's compliment of the numbers 12345678, 87654321.

4. a) Convert the given binary code number to equivalent gray code 001001011110010
   b) Convert the given binary code number to equivalent Excess-3 code 1001

5. a) Express the following numbers in decimal: $(10110.0101)_2$, $(16.5)_{16}$, $(26.24)_8$.
   b) $(A0F9.0EB)_{16}$, $(A98.0DC)_{16}$ into decimal, binary and octal.

6. Perform the following conversions
   a) $(476.64)_{10} = (\ )_2 = (\ )_8$ b) $(2564.603)_8 = (\ )_{16}$ c) $(110001.1010010)_2 = (\ )_{16}$

MALLAREDDY UNIVERSITY

(As per Telangana Private Universities Act No. 13 of 2020 and G.O.Ms.No.14, Higher Education (UE) Department)
Maisammaguda, Near Kompally, Hyderabad – 500 100, TS, India

SCHOOL OF ENGINEERING

B. Tech I Year I Semester

FINANCIAL INSTITUTIONS, MARKET AND STRUCTURE

QUESTION BANK

UNIT-1	
Question:1	What is Financial System? Explain the functions of Financial System.
Question:2	What are the indicators of Economic Development in India? Explain any 5 in brief.
Question:3	Explain the recent trends in Indian Financial System.
Question:4	What is the process of saving investment?
Question:5	Describe the role of Indian financial system in Economic development of India
Question: 6	Illustrate the structure and components of financial system.
UNIT-2	
Question:1	Define financial Regulators. What is the need of Financial Regulations in Financial Market?
Question:2	Critically examine roles and functions of RBI
Question:3	What is Monetary Policy? Explain the tools of Monetary Policy.
Question:4	"To promote orderly and healthy growth of securities market and protection of investors, SEBI was set up". With reference to this statement explain the objectives of SEBI.
Question: 5	Briefly explain powers and scope of IRDAI.
Question: 6	What is PFRDA? Explain the functions of PFRDA.
UNIT-3	
Question:1	What is the meaning of Financial Intermediation? Discuss the functions of Financial Intermediaries.
Question:2	Who are NBFC'S? Explain the functions and working of NBFCS.
Question:3	What are commercial banks? Discuss the types (Public Sector and Private Sector Bank) of commercial banks.
Question:4	What the recent innovations in Banking. Explain any 5 briefly.
Question: 5	Define the following terms and state their feature: a) International Banking b) NPA c) Risk Management in Banking d) Bank Financial Statement
Question: 6	Write short notes on following: a) IFCI b) SFCs c) IRBI d) SIDBI

UNIT-4	
Question: 1	What do you mean by Financial Market? Explain the structure of Indian Finacial market with help of chart.
Question: 2	State the differentiation between Money Market and Capital Market.
Question: 3	Explain the features of following money market instruments: a) Treasury Bills b) Commercial Papers c) Certificate of Deposits d) Call and notice money market
Question: 4	Describe the trading and settlement procedure of stock exchange.
Question: 5	What is meant by term 'Derivative' Explain the types of Derivatives briefly.
Question: 6	Explain the structure and organization of Securities market of India.
UNIT: 5	
Question: 1	Define different types of schemes floated by mutual funds briefly.
Question: 2	What is meant by Credit rating? Analyse the important features of credit rating business in India.
Question: 3	Define Venture Capital. What are the scopes and objectives of Venture Capital funds?
Question: 4	Compare the functions of merchant banking with the commercial banking in India.
Question: 5	What is Merchant Bank? What are the responsibilities of Merchant Bankers?
Question: 6	What are the advantages of investments of investments through mutual funds?

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Maisammaguda,Dulapally,Hyderabad 500100. TS., India.

Subject: Programming for Problem Solving (PPS)

QUESTION BANK

UNIT I

1) a) What is Computer? Briefly explain about the computer with neat Block diagram.(8M)
   b) Briefly explain about the Computing Environments. (4M)
2) a) Briefly Explain about Computer languages? (3M)
b) What is Flowchart? Draw and explain the symbols of flowchart.(3M)
c) Draw the flowchart and write algorithm to calculate the total and average of 3subjects marks. (6M)
3) a) What is variable? Explain different constraints to declare the variables. (6M)
   b) Briefly explain about Features of C.(6M)
4) a) Briefly explain about Structure of a C Program.(5M)
   b) Write a C program to find a number is prime or not. (7M)
5) a) What is Data type? Briefly explain about different data types in C. (5M)
   b) Write a simple C program to find out the sizes of all primitive data type variables and print their assigned values and addresses. (5M)
6) a) Explain briefly about tokens in C.(5M)
   b) Draw the flow chart for step by step creation and running program.(7M)

UNIT II

7) Briefly explain about different operators used in C programming with examples? (12M)
8) a) What is Expression? Explain Precedence and Associativity in an expression. (8M)
   b) Briefly explain Bitwise operators with example program.(4M)
9) a) Briefly explain about Type conversion techniques in C with example program. (6M)
   b) Explain Increment and Decrement operators. (3M)
   c) Write a simple C program to find out the largest number of a given two integer numbers using Conditional operators. (3M)
10) a) Briefly explain about if-else statement with example program.(5M)
    b) Briefly explain about if-else if statement with example program(7M)
11) a) Briefly explain about switch statement with example program.(6M)
    b) Briefly explain about while and do-while loop statements with example program(6M)
12) a) Briefly explain about for loop statement with example program.(4M)
    b) Briefly explain about break and continue statements with example program. (8M)

UNIT III

13) a) What is a function? Why we use functions in C language? Give an example.(8M)
    b) Explain the Parameter Passing Mechanisms in C Language with examples.(4M)
14) a) Explain the various categories of user defined functions in C with examples?(8M)

b) Enumerate the scope rules in C.(4M)

15) a) What is recursive function? Write a program to display Fibonacci sequence using recursion.(8 M)

b) Write a C program for exchanging of two numbers using call by reference mechanism.(4M)

16) a) Write program to find GCD of two integers using non-recursive function and Recursive function.(8 M)

b) Explain the difference between local and global variables with example. (4M)

17) a) How can we pass the Whole Array to Functions? Explain with example. (8M)

b) Briefly explain about function prototype, function call and function definition with an example. (4M)

18) a)Write a C program to add elements of 3*3 Matrix. (8M)

b) Explain different types of storage classes in C with an example. (4M)

UNIT IV

19) Write a C program which calculates the total number of consonants in the string "Programming for Problem solving". It then prints out the string and the total number of consonants in the string.(12 M)

20) a) Explain about the following string functions in C with suitable examples(8M)

i)gets() ii)puts() iii)strcpy() iv)strcmp()

b) Write a c program to count number of characters in a given string. (4M)

21) a) How is the variable address determined? Write a C program to swap two integers using pointers. (7M)

b) Write a program to find the length of the string using Pointer. (5M)

22) a) Write a C program to find the sum of integer array elements using pointers.(7M)

b) Briefly explain about array of pointers with an example.(5M)

23) List out functions used to allocate memory dynamically. Write the prototype of the functions. (12M)

24) Write a program that reads a character from keyboard and then prints it in reverse case that is if the input is upper case, the output will be lower case and vice versa.(12 M)

UNIT V

25) a) Differentiate structure and union with suitable examples.(5M)

b) Declare a type-defined structure for an inventory item consisting of 6 fields: part number, part description (DMA string), reorder point (integer), number of items currently on hand (integer), unit measure, and unit price. Display the inventor details. (7M)

26) a) Write a C program to illustrate the method of sending an entire structure as a parameter to a function. (8M)

b) Write short notes on different ways of initializing structure.(4M)

27) Write a C Program to Calculate Total and Percentage marks of a 10 students using structure.(12 M)

28) Discuss the use of files and different file operations, fopen(),fclose(),fscanf(), and fprintf() with sample. (12M)

29)a) Write a C program to Copy one file content to another file.(8 M)

b) Explain about different modes used in file steams.(4M)

30) Write a C program that uses functions to perform the following operations.(12M)

i) Reading a complex number ii) Writing a complex number

iii) Addition of two complex numbers iv) Multiplication of two complex numbers

FRENCH QUESTION BANK

UNIT 1.

1. Écrivez les salutations. (7 au choix.)
2. Difference between expressions and sentences.
3. Fill up an admission form or basic details form.
4. Conjugez les verbs etre, avoir, aller, venir au present.
5. Nommez les professions et les nationalites. (7 au choix.)
   ex: il est indien, elle est professeur.
6. Écrivez les.
   75, 84,93,14, 3, 56th, 17th, 111.

UNIT 2.

1. Les articles dèfinis ou indèfinis, Contractés. Rèvisez.
2. Presentez votre père OU votre mère OU votre oncle OU votre tante.
3. Les adjectifs --- grand, pétit, gros, long, intelligent, vite etc.
4. Les adjectifs interrogatifs et demonstratifs --
   Ex : quel mois sommes - nous? * quelle couleur aimes - tu? Cet avion est grand.
5. Nommez 3 couleurs au masculin et 3 au feminin.
6. Décrivez votre classe OU l' Université. 1st group of verbs **ER**

UNIT 3.

1. Donnez les heures.



22:45

2. Les jours de la semaine et les mois de l'année.
3. Décrivez Votre journée.
4. Donnez les questions. Ex: j'ai 18 ans, nous sommes une gomme dans le sac.
5. Quels sont vos hobbies et vos passe temps? 2nd group of verbs **IR**
6. Conjugez les verbes devoir, prendre, savoir, connaitre.

UNIT 4.

1. Les adjectifs possessifs. Mon, ta, ses etc. Ex: mon ami est beau, elle est ma tante.
2. Écrivez un petit conversation au restaurant. (in visual phrase pdf.)
3. Écrivez un petit dialogue au supermarché. (in visual phrase pdf.)
4. Révisez et conjugez les verbes pouvoir, vouloir, 3rd group of verbs **RE.**
5. Décrivez l' image .

6. Que mangez-vous pour le diner?

UNIT 5.

1. Complétez les phrases avec les Prépositions.
    - Le chat est ____ (under) la table.
    - Mon sac est ____ (inside) le bureau.
    - Il conduit _____ (around) le collège.
2. Quel temps fait-il ?
3. Décrivez une saison.
4. Quelle saison aimez - vous? Pourquoi.
5. Faites les phrases au Futur Proche.
    - Ex: je mange les frites --- je vais manger les frites.
    - Vous donnez les fleurs --- vous allez donner les fleurs.
6. Faites les phrases au Passé Recent.
    - Nous faisons le travail -- nous venons de faire le travail.
    - Tu veux le crayon --- tu viens de vouloir le crayon.