Code No. : 21511 O2

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.E./M.Tech. (CBCS) I-Semester Main Examinations, December-2018
Finishing School-I

Time: 1½ hours

Max. Marks: 30

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Write down two sentences saying what you do every day and 2 things you don't do in the morning.

2. Answer the questions according to the reading passage. Give the paragraph a title

    Obese people don't want pity and we don't want anything but a hand up so we can get back to work. Some of us would like to contribute and even pay taxes again but we need some assistance. There are all kinds of programs assisting young people to go to school, like student loans and grants. This really large group of our population could benefit from some sort of program that might involve education, liposuction, special footwear, and a part-time personal trainer who would develop individualized solutions for each person. Let's get some intelligent kind of operation going. Let's develop a war on fat.

    According to the passage, the obese people want _____.

    A) a lot of money to live without working
    B) assistance to live a normal life
    C) some hospitals for cosmetic surgeries to remove their fats
    D) to pay taxes for everything that they buy
    E) students loan and grant

3. Write two points in favour of the topic "Girls must be given proper Education"

4. Write two sentences on what you did last Sunday.

5. Write down two adjectives that describe you.

Part-B (5 × 4 = 20 Marks)
(All sub-questions carry equal marks)

6. a) From the options A, B, C and D, choose the form that best fits the function state, to complete the dialogue below.

    Atan: Hello, Dinah. Did you have a good trip?

    Dinah: It was not too bad. In fact I managed to sleep a bit. ____1____ (to express satisfaction)

    Atan: Is that all your luggage?

    Dinah: Yes. Wait a minute. The small hold all is missing. ____2____ (to express dismay) I must have left it at the duty-free shop.

    Atan: ____3____ (to reassure) We can ask the security guard to get it. Which shop was it?

    i) To express satisfaction
       A) It was so quiet.   B) The passengers slept.
       C) The seat was really comfortable.   D) It has made me feel rested.

    ii) To express dismay
       A) Oh dear!   B) What a nuisance!
       C) Where could it be?   D) I remember now.

    iii) To reassure
       A) Don't cry.   B) Don't worry.   C) Are you sure?   D) We'll look for it.

b) Complete the following conversation

Preeti: (i)............... breakfast, today?

Mother: Butter toasts and milk.

Preeti: But mamma, you know (ii)................ Why don't you ever prepare it for me?

Mother: Dear, nobody else in the family likes porridge. I have to take care of everyone.

Preeti: Oh. I understand. By the way, (iii)................ Has he gone somewhere so early in the morning?

Mother: Yes. Dad has gone to the temple. You know, he is on fast today.

Preeti: (iv) .... fast, mamma?

Mother: Keeping fast improves our digestive system. Moreover, it also enhances our will powers.

Preeti: Oh. I see. I too will try some day.

7. a) **Directions:** Read the passage and then respond to the questions. Each question will ask you to make a 'logical inference' based on textual details. **Explain your answer by referencing the text.**

Screech! Karen stomped on the gas pedal the moment the light turned green. She looked over her left shoulder and zigged past a semi-truck. She zoomed ahead and looked over her right shoulder and then zagged past a motorbike. She glanced at the clock on the console and darted into the parking lot. Whipping into a parking spot, she grabbed her suitcase and ran through the lot, up the escalator, and into the terminal. Her heavy suitcase was bumping and bouncing the whole way. Just as she entered the terminal, she heard an announcement over the loudspeaker, *"Final boarding call for flight 205 to JFK..."* Karen looked at her ticket and then at the line to get through the security checkpoint, which wrapped around several turnstiles and slithered like a lethargic snake. Karen sighed and then slowly walked to the customer service desk.

i) Why is Karen in a hurry?

ii) Why does she start walking slowly at the end of the passage?

b) i) Emerson said that the poet was landlord, sea lord and air lord. The flight of imagination made the poet master of land, sea and air. But a poet's dream of yesterday becomes today an actual achievement and a reality for all men. Even those who invented, improved and perfected the airplane could hardly have dreamt of the possibility of flight into outer space.

The passage best supports the statement that:

(1) all imaginations become a reality some day.

(2) what man imagined has never been impossible; he has always turned it a reality through his conception of ideas and sheer hard labor.

(3) seemingly impossible imaginations make one a good poet.

(4) man has reached the climax of technological development with his exploration into outer space.

ii) The school has always been the most important means of transferring the wealth of tradition from one generation to the next. This applies today in an even higher degree than in former times for, through the modern development of economy, the family as bearer of tradition and education has become weakened.

This passage best supports the statement that for transferring the wealth of tradition from one generation to the next _____

(1) there are means other than the school   *(2)* several different sources must be tried

(3) economic development plays a crucial role *(4)* modern technology must be put to use

(5) Family, as ever, is the most potent means.

8. a) Do you agree or disagree with the statement below? No child should have a Facebook account unless he or she is over 13 years old. State your opinion and use details to support your point of view.

   b) Cell Phones Should Be Banned in Schools

   All cell phones should be banned in schools during the regular school day. Cell phones are a distraction to students, their classmates, and their teachers. Cell phones are a distraction because they prevent students from paying attention in class when they are being used. Students who are texting in class, or otherwise using their cell phones to play games, are missing valuable instruction from the teacher in the form of class notes, the introduction of new ideas and concepts, and live demonstrations and examples of new topics. Students who use their cell phones regularly in class generally.

   Do you agree or disagree with the author who wrote the essay above? Write your opinion, followed by 3 or 4 sentences to show why you agree or disagree. Refer to specific points in the passage.

9. a) Directions:
      i)   Use all the phrases given.
      ii)   Minimum words should be 50 otherwise your email cannot be validated.
      iii) Addressing and signing should be done as in the question given.
      iv)   Common grammatical rules, punctuation should be according to Standard English.
      v)   You can use your own phrases along with the phrases given.

   Email:

   As a member of your residential society, write an email to the inspector of local Police station, Mr. Sharma, informing him about miscreants who ride their bikes rashly every evening outside your society. Sign the email as William.

   residential area – ride – rashly – children – play – elderly – walk – grocery shop – across the road – dangerous – accidents – nuisance – action – immediately.

   b) Now complete the story about Kung Fu Panda's adoption. Choose one verb from the box, and write the correct past tense form in the paragraph.

   BE - GO - MAKE - TRY - GIVE - FEED - BRING - WAIT

   It ___ just another day at the restaurant. I ___ out to the back. There ___ cabbages, turnips, radishes. There ___ no radishes, just a very hungry baby panda. There___ no note. I___ for someone to come looking for you, but no one did. I___ you inside,___ you, ___ you a bath, and ___ to put some pants on you. And then I ___ a decision that changed my life forever.

10. a) Write down your answer to the interview question. "Tell me about yourself"?

    b) How would you answer the question? What is your biggest strength?

11. a) Complete the conversations below with the best answer:

    You go to the cinema to buy two tickets for Ice Age 3. You say:_____

    i) I need 2 tickets for the cinema at today.   ii) Can I have the tickets for the movie now?
    iii) I would like 2 tickets for Ice Age 3.   iv) Do you have popcorn and 2 tickets?

    The waitress offers you some more water. You say:_____

    i) Yes, I have been to the toilet.   ii) No, thank you. I've eaten already.
    iii) Yes, please. I would like some more water.   iv) No. I don't want to do that.

    My sister asks me the way to the supermarket. I say:_____

    i) Let us have a look at it.   ii) Yes, I can find that for you.
    iii) It's far away. You should take a taxi.   iv) I go to the supermarket every Sunday.

Your friend is feeling sick and needs to go to the doctor. You ask your friend: _____
- *i)* Do you think I can go to the doctor?
- *ii)* Would you like me to take you to the doctor?
- *iii)* Where are we going today?
- *iv)* Who is the nice new doctor?

b) Sushi, the thousand-year-old Japanese delicacy, started small in the United States, in a handful of restaurants in big cities. Today, sushi consumption in America is 50% greater than it was ten years ago and not just in restaurants. Sushi is also sold at concession stands in sports stadiums, university dining halls, and in supermarkets throughout the country.

This paragraph best supports the statement that
- *i)* sushi is now a fast food as popular as hot dogs, burgers, and fries.
- *ii)* more sushi is sold in restaurants than in supermarkets.
- *iii)* Americans are more adventurous eaters than they were in the past.
- *iv)* sushi wasn't always widely available in the United States.

12. Answer any *two* of the following:

a) There are a number of Phrases used when asking for information in English. Here are some of the most common:
- *i)* Could you tell me...?
- *ii)* Do you know...?
- *iii)* Do you happen to know...?
- *iv)* I'd like to know...
- *v)* Could you find out...?
- *vi)* I'm interested in...
- *vii)* I'm looking for.

These two forms are used for seeking information over the phone:
- *viii)* I'm calling to find out...
- *ix)* I'm calling about...

Create a sentence using the phrases given above.

b) This story has lots of mistakes. There are 33 verbs in the wrong tense! Can you find them all:

It's all in the past

I wake up yesterday morning and I get out of bed. It is a beautiful day. The sun was shining and the wind was blowing. I decide that I would go for a walk. I start by walking down my road. I push open my gate and close it behind me. I walk for miles and miles along a country road. I even visit my aunt. Along the way I pass a young man selling fruit. 'How much are the apples?' I ask. '£1 for a bag,' he say. I pay the man and I continue to walk. I eat all of the apples except for one, which I drop on the ground, they are delicious.

After a while I meet another man, this man have a camel. The camel was a special camel, it have no humps. 'What is his name?' I ask the man. 'His name is Humphree', say the man.

I walk for a very long time, soon the sun begin to go down. It is beautiful, I love sunsets. I get home at about 12:30. I is very tired, normally I go to bed at 10:00. I put on my pyjamas, rub my hands together and went straight to bed. As soon as my head hit the pillow I fall asleep. That is the best walk of my life, I love it. The next day I call my mother and tell her all about it.

c) Write down your answer to the question "Why should I hire you"?

ෂෂෂෂෂ

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.E. (CBCS) I-Semester Main Examinations, December-2018
English for Research Paper Writing

Time: **3** hours
Max. Marks: **60**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	What are the three key aspects which aids to the effectiveness of a research paper?	2	1	1	10
2.	TRUE or FALSE. A literature review should explain the results of your own research. Justify your answer.	2	3	1	10
3.	According to APA style guide, what must be font style and paper format to be used for publishing a research article/paper?	2	1	2	10
4.	Write the syntax which is used for writing references in a research paper, according to the APA style guide.	2	1	2	10
5.	True or False. The conclusions and recommendations of a research can be covered under the same heading. Justify your answer.	2	3	1	10
6.	What should come first – Conclusion or Recommendation? Justify your answer.	2	2	1	10
7.	List and define any two methods used when building data using Qualitative methodology.	2	2	1	10
8.	What is hedging? Provide some examples on how hedging is used in a research paper.	2	2	3	10
9.	List any two differences between formal and informal writing, along with supported examples.	2	2	1	10
10.	What is plagiarism? List any two important strategies that can be used to avoid plagiarism in a research paper.	2	1	1	10
	Part-B (5 × 8 = 40 Marks)				
11. a)	What is the difference between paraphrasing and summarizing?	3	2	3	10
b)	Assume that you are writing a paper related to communications. While researching, you come across the following passage written by Frederick Jackson Turner:	5	4	3	10
	"Alexander Graham Bell is the man credited with inventing the telephone. He was born in Scotland in 1847, but later moved to Canada, where he taught deaf people. His invention was based on his discovery that sound waves could travel through wire; once electricity was added to his listening contraption it was possible to extend the distances that the sound waves could be sent. He registered his invention in 1876, thereby, ensuring his position in history as the man who invented the telephone."				
	In your own words, write the best 'paraphrase' you can of Turner's passage, along with citation.				
	In your own words, write the best 'summary' you can of Turner's passage.				
	Rewrite the passage to include quotation from Turner's passage.				
12. a)	In which section of the research paper, the sample data is discussed and analyzed? What components are used to present the data? Support your answer with illustrated examples.	4	3	1	10
b)	Identify and re-write the references list below, as per the APA style guide: i) Jenkins, H. Fans, bloggers, and gamers: exploring participatory cultures. New York University Press, New York. 2006.	4	3	2	10

					M
	ii) V.J. Cook. 2004. "Flava'n Gorillaz: Pop group names." In Accommodating Brocolli in the Cemetary, pp. 21-22. Simon and Schuster: New York. iii) Yonke, David. (2008). "Monks on the road for peace: Tibetan Buddhists bring message that 'happiness is an internal event'." *The Blade (Toledo, OH)*, pp. B7. iv) V.J. Cook. (2004). "Flava'n Gorillaz: Pop group names." In *Accomodating Brocolli in the Cemetary*, pp. 21-22. Simon and Schuster: New York.				
13. a)	When writing the sentences in a section, what are the best practices to be followed? Mention any four.	4	2	3	10
b)	Write syntax for the following four citation scenarios: i) Single Author ii) Multiple Authors iii) Unknown Author iv) Multiple sources, different Authors	4	3	1	10
14. a)	What is Research Methodology? List down the sequence of sections to be included in a Research Methodology section and explain their significance.	4	2	1	10
b)	How data is collected in a Quantitative method? Explain with examples.	4	3	1	10
15. a)	What are the main elements to be included in the Conclusion section of a research paper?	4	2	1	10
b)	In which sections of the research paper, the research limitations are documented? Also, mention the tone used when writing limitations.	4	3	1	10
16. a)	What is the structure of a research paper? Explain each section with supported examples.	5	2	1,3	10
b)	When you start drafting the research paper, in which order you will fill the information in each sections? List the order and justify your answer.	3	2	3	10
17.	Answer any *two* of the following:				
a)	What is an abstract? Please mention the key elements to be included in an abstract.	4	2	3	10
b)	Read the abstract below. Identify and highlight whether it makes an appropriate passage for an abstract or not. Also, justify your findings. "The purpose of this paper was to critique and contrast four research articles which explored adaptive functioning in the interepisodic phase of bipolar disorder. Having discussed why this is an important topic in Adult Occupational Therapy and having given a brief overview of each article, the writer critiqued each study with respect to the following headings: theoretical background, research design, sampling, measurement, data analysis, conclusions, and contribution to OT knowledge base. In conclusion, it was found that despite methodological limitations, the studies' findings generally supported previous research which suggests that people with bipolar disorder experience significant interepisodic functional morbidity. Implications for Occupational Therapy practice were then briefly discussed."	4	4	3	10
c)	List and define various strategies that can be used by a writer, to draft a literature review.	4	1	1	10

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	40%
2	Knowledge on application and analysis (Level-3 & 4)	60%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	---

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.E. (EEE: CBCS) I-Semester Main Examinations, January-2019

(Power Systems & Power Electronics)

Power Electronic Converters

Time: 3 hours   Max. Marks: 60

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Find the current 'i' at t=1sec of the given circuit with Vs=10V, R=20Ω & L=5H, when switch 'S' is closed at t=0 & assume initial current through inductor is zero.	2	4	1	1,2,3, 4,9
2.	For the above circuit shown in Fig. (a). Draw the voltage waveform across inductor 'v_L'	2	1	1	1,2,3, 4,9
3.	In 3-phase full converter with RLE load, draw the output voltage Waveform 'V_o' for 60° firing angle in continuous conduction mode.	2	2	2	1,2,3, 4,9
4.	Find the Peak inverse voltage of the diode in 1-phase full wave diode bridge rectifier with R-load if source voltage $V_s=325\sin\omega t$.	2	2	2	1,2,3, 4,9
5.	In a buck converter to maintain regulated voltage of 10V for the input voltage variations 20-50V. Find the Dmin and Dmax in continuous conduction mode.	2	4	3	1,2,3, 4,9
6.	Draw circuit diagram of Cuk dc-dc converter.	2	1	3	1,2,3, 4,9
7.	Write the Fourier series expression of output voltage waveform for a single-phase half-bridge inverter.	2	4	4	1,2,3, 4,9
8.	List the applications of inverters.	2	1	4	1,2,3, 4,9
9.	Sketch the output current waveform of single-phase voltage controller with R-L load for $\alpha > \emptyset$.	2	1	5	1,2,3, 4,9
10.	Sketch the output voltage waveform of single-phase step-up cycloconverter with R-load.	2	1	5	1,2,3, 4,9
	Part-B (5 × 8 = 40 Marks)				
11. a)	Derive Average and R.M.S output voltage of 1-phase Half wave Diode Rectifier with R-load.	4	2	1	1,2,3, 4,9
b)	If V_s=230V at 50Hz, R=10Ω, L=5mH, Extinction angle β=210°. Find Average value of Output Voltage and Output Current for single-phase half-wave uncontrolled rectifier connected to R-L load.	4	2	1	1,2,3, 4,9
12. a)	Draw circuit diagram of three-phase semi-converter with RLE load and also output voltage waveforms for firing angle α=15° & α=90° (assume continuous conduction mode)	4	4	2	1,2,3, 4,9
b)	Derive Average output voltage of 1-phase full-wave mid-point converter with RL load and also draw output voltage and output current waveforms for continuous conduction mode. Estimate average output voltage for 1-phase input voltage of 230V, 50Hz with α=30°	4	4	2	1,2,3, 4,9

		M	L	CO	PO
13. a)	Explain the operation of buck converter with neat diagram. Derive the expression for output voltage in continuous conduction mode.	4	2	3	1,2,3,4,9
b)	In a boost converter, consider all components to be ideal. Let Vd be 8-16 V, Vo=24V (regulated), fs=kHz and C=470μF. Calculate Dmax, Dmin & Lmin that will keep the converter operating in a continuous conduction mode if Po≥10W.	4	3	3	1,2,3,4,9
14. a)	Describe the working of a single-phase full bridge inverter (VSI) with neat diagram and sketch the output voltage waveform for R-load.	3	3	4	1,2,3,4,9
b)	Discuss the principle of working of a three-phase bridge inverter (VSI) with an appropriate circuit diagram. Draw any one phase and one line voltage waveform for 180^0 mode of operation of SCRs with star-connected resistive load. The sequence of firing of various SCRs should also be indicated in the diagram.	5	5	4	1,2,3,4,9
15. a)	Discuss the principle of phase control in single phase full-wave ac voltage controller with R-load. Derive expression for the R.M.S value of its output voltage.	4	2	5	1,2,3,4,9
b)	Describe the basic principle of working of single –phase to single –phase step-up cycloconverter with the help of mid-point configuration. Illustrate your answer with appropriate circuit and waveforms. The conduction of various thyristors must also be indicated on the waveform.	4	3	5	1,2,3,4,9
16. a)	Derive i(t) & v_L(t) for the given circuit diagram and also draw their waveforms, when switch S is closed at t=0 and all initial values of i(t), v_L(t) & v_C(t) are assume to zero.	4	2	1	1,2,3,4,9
b)	Deduce average output voltage of 3-phase full converter with RLE load and also draw output voltage waveform for firing angle α=15° & α=90° (assume continuous conduction mode).	4	2	2	1,2,3,4,9
17.	Answer any *two* of the following:				
a)	Explain the operation of Buck-Boost converter in continuous mode with neat diagram. Derive expression of output voltage in continuous conduction mode.	4	2	3	1,2,3,4,9
b)	Derive Fourier series expression for the output voltage obtained from single-phase full bridge inverter.	4	5	4	1,2,3,4,9
c)	For a single –phase voltage controller feeding a R-L load, draw the waveforms of source voltage, gating signals, output voltage and output currents. Describe its working with reference to the waveforms drawn.	4	2	5	1,2,3,4,9

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	57.5%
2	Knowledge on application and analysis (Level-3 & 4)	31.25%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	11.25%

ଔଔଔଔଛଠଇଠଇ

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
M.E. (ECE: CBCS) I-Semester Main Examinations, January-2019
(Embedded Systems & VLSI Design)

Digital IC Design

Time: **3 hours**   Max. Marks: **60**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	What is sub-threshold slope? What is its effect on P_d and performance?	2	2	1	1,2
2.	List two important design metrics for evaluating a VLSI circuit performance and comment on their trade-offs.	2	2	1	1
3.	Implement OR/NOR function using Complementary Pass-transistor Logic.	2	2	3	2
4.	How do you compensate for the charge leakage in a dynamic logic NAND2 circuit?	2	3	3	2
5.	Distinguish a dynamic CMOS latch from a static CMOS latch, giving neat circuits.	2	2	3	1,2
6.	Give two sources of power-grid noise in a VLSI chip. How do you mitigate them?	2	3	4	3
7.	How does dual V_{th} transistor technique reduce power consumption in a VLSI system?	2	2	5	2
8.	Compare a carry bypass adder with a ripple carry adder in terms of speed and area.	2	2	5	2
9.	Draw a 1T DRAM cell. Draw its Read and Write timing diagrams.	2	2	6	2
10.	Draw a simple sense amplifier circuit used in RAM structures? Why is it necessary?	2	3	6	2
	Part-B (5 × 8 = 40 Marks)				
11. a)	Why are design abstraction levels important in VLSI design? Justify with an example.	4	3	1	3
b)	Estimate the propagation delay, t_{pd} and Noise Margins, NM_L and NM_H for skewed CMOS inverter sized as $(W/L)_P / (W/L)_N = (4/1)$.	4	3	1	2
12. a)	Compare Transmission Gate (TG) logic with pass transistor logic. Plot the R_{eq} vs V_{out} for a TG and interpret.	4	2	3	2
b)	Design an 8- input AND gate with an EE of 6 using pseudo-nMOS logic. If the parasitic delay of an n-input pseudo- nMOS NOR gate is (4n+2)/9, what is the path delay?	4	5	3	3
13. a)	Draw the schematic of a C^2MOS Master-slave register. Why is it not clock-overlap sensitive?	4	2	3	2
b)	A function $\log(|a+b|)$ is to be implemented using three modules, namely, adder, absolute value and log computers. Given t_{pd} of each of these modules is 10ns (approx) and the registers used have a set up time of 20 ps and t_{c-q} delay of 100 ps, compute the maximum clock frequency at which this system works correctly. By how much can you improve the performance by pipelining? What is the latency?	4	4	3	2

		M	L	CO	PO
14.	a) Briefly explain the principle of operation of a Carry-Look ahead Adder (CLA) with the help of a conceptual diagram. How is the ripple effect eliminated? What are its limitations?	4	3	5	2
	b) A CMOS VLSI chip in 1.2V, 100 nm process has 200 million transistors, of which 180 million transistors are in memory arrays. (W/L) ratios of Logic and memory transistors are (6/1) and (2/1) with activities 0.1 and 0.05 respectively. Assuming the transistors have a gate capacitance of 2 fF/μm, estimate the dynamic power consumption per MHz of the system.	4	4	5	2
15.	a) Compare and contrast a 3T DRAM cell with a standard 6T SRAM cell with suitable schematics.	4	2	6	2
	b) Draw the architecture of a 128K SRAM organized as a 512 × 256 core array. Estimate the word-line capacitance assuming C_g = 2fF, C_{sd} = 0.5 fF and C_w = 0.2 fF.	4	5	6	3
16.	a) Define LE, BE and EE. Find the LE of a NAND4.	4	2	2	2
	b) A simplified clock distribution network is shown below. Assuming the bottom path with 100C is critical, size the inverters using LE technique.	4	4	2	3

		M	L	CO	PO
17.	Answer any *two* of the following:				
	a) SRAM DRV.	4	3	6	2
	b) 4 bit Barrel Shifter.	4	2	5	1
	c) Standby Power Management in a VLSI Chip.	4	2	5	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	50%
2	Knowledge on application and analysis (Level-3 & 4)	37%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	13%

బిజిబిజిబిజిబిజి

Code No. : 21913

VASAVI COLLEGE OF ENGINEERING (*Autonomous*), HYDERABAD
M.Tech. (CSE: CBCS) I-Semester Main Examinations, January-2019

Advanced Data Structures

Time: **3** hours

Max. Marks: **60**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	What are the characteristics of a good Hash Function? Give two examples.	2	2	1	1
2.	Given the hash table of size 11, use Division hash function to find the indices for the keys 11, 77, 58, 46, 37, 92, 21.	2	3	1	1, 2
3.	Randomizing a data structure improves the performance of operations. Justify the statement with an example.	2	2	2	1
4.	Give reasons for bounding the height of a Skip list to O(logn).	2	2	2	1, 2
5.	Draw the binary search tree (BST) after the insertion of the keys 50, 25 , 29, 62, 22, 56, 16, 32 into an initially empty tree. Also, draw the final BST after deletion of the keys 29, 50 from the above constructed BST.	2	2	3	1, 2
6.	Perform the operation deletion(7) on the following splay tree and draw the resultant splay tree.	2	3	3	1, 2
7.	What is the longest prefix that is also the suffix of the string "cgtacgttcgtacg"?	2	3	4	1,2,3
8.	Write the looking glass heuristic and character jump heuristic.Implement them on the following text and pattern. T: course on ADS P: ADS	2	3	4	1,2,3
9.	Differentiate between 1-dimensional range tree and 2-dimensional range tree.	2	2	5	1, 2
10.	What is the significance of a k-d tree? What is the worst case depth of a k-d tree defined on 'n' points in the plane?	2	2	5	1,2,3
	Part-B (5 × 8 = 40 Marks)				
11. a)	Give reason for maintaining constant load factor for a Hash Table. Explain how Rehashing helps in improving the performance of hashing.	4	2	1	1, 2
b)	Rishi is excited to participate in an "online coding" game conducted during a technical fest. This game will provide the participant to randomly choose 'n' balls and place them in the baskets numbered from 0 to n-1. The number of balls 'n' cannot be more than 10. Each ball is referred with a unique ball-id number which is between 1 to 100. If the balls are uniquely placed in different baskets he will win a gift worth of 500 rupees. Given the number of balls 'n' and the ball-id numbers of 'n' balls as input, your task is to help Rishi in designing a solution to win the game. Use hashing technique to propose a solution to the problem.	4	5	1	1,2,3

12.	a)	Write an Algorithm for searching an element in a Skip list. Compare the worst case time complexity of a search function in a Skip list to a single Linked List with example.	4	2	2	1, 2
	b)	How can we augment sorted linked lists to make the search faster? Draw a skip list resulting from performing the following sequence of operations removeElement(25), insertElement(44), removeElement(70), insertElement(75) into a Skip list Containing the keys 12, 25, 36, 50, 67, 70, 78, 96, 110.	4	5	2	1,2,3
13.	a)	What are the properties of a Red black tree? Explain the double red and double black problem caused while inserting and deleting a node with the help of an example.	4	2	3	1, 2
	b)	Construct an AVL tree with the keys 45,78, 35, 10, 22, 58, 96, 112, 89, 34, 66, 12. Also specify the necessary rotations performed.	4	3	3	1, 2
14.	a)	Explain Huffman coding algorithm. Draw the frequency array and Huffman tree for the following string: "dogs do not spot hot pots or cats"	4	2	4	1,2,3
	b)	Compute the failure function and show the result of implementing KMP algorithm in finding the pattern P in the text T T: a a b a a c a c a c c b a b a b a b a c a a b b a c P: b a b a b	4	3	4	1,2,3
15.	a)	Write an algorithm for 1-dimensional range search and analyze its time complexity.	4	2	5	1, 2
	b)	Draw a Quad tree for the following set of points assuming a 16X16 bounding box {(1,2) ,(4,10) , (14,3),(6,6),(3,15),(2,2),(3,12),(9,4),(12,14)}	4	3	5	1,2,3
16.	a)	Illustrate extendible hashing technique with the help of an example.	4	2	1	1, 2
	b)	What is a deterministic skip list? Explain the procedure for deletion of a key from a skip list with example.	4	2	2	1, 2
17.	Answer any *two* of the following:					
	a)	What are the properties of B-Tree? Explain the insertion operation on a B-tree of order 5.	4	2	3	1, 2
	b)	Draw the compact representation of suffix trie for the string "minimize minime"	4	3	4	1,2,3
	c)	Design an algorithm to construct a priority search tree.	4	2	5	1, 2

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	60
2	Knowledge on application and analysis (Level-3 & 4)	30
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	10
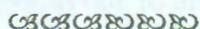
ಇಞಇಞಇಞ೮೦೮೦

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
M.E. (Mech. Engg.: CBCS) I-Semester Main Examinations, January-2019
(Advanced Design & Manufacturing)
Metal Cutting and Forming

Time: **3** hours

Max. Marks: **60**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Compare HSS and ceramic cutting tools used in metal cutting.	2	2	1	1
2.	Model the relation proposed by Lee and Shaffer.	2	3	1	1
3.	Illustrate the force system in turning.	2	2	2	1
4.	Explain the principle of work tool thermocouple.	2	2	2	1
5.	Recall Taylor's tool life equation.	2	1	3	1
6.	Explain the influence of Carbon tetra chloride on copper machining.	2	2	3	1
7.	Compare cold working and hot working.	2	2	4	1
8.	Identify the factors that influence plastic deformation.	2	3	4	1
9.	Summarize the merits of Electromagnetic forming.	2	2	5	1
10.	Explain the principle of high velocity forming.	2	2	5	1
	Part-B (5 ×8 = 40 Marks)				
11. a)	Sketch and explain ORS tool nomenclature during turning operation.	4	2	1	1
b)	Deduce a relation for shear angle in orthogonal machining.	4	5	1	1
12. a)	Illustrate the forces acting on a milling cutter and use them to estimate the motor power.	4	2	2	1
b)	Illustrate temperature distribution in orthogonal machining, suggest an explain the best method to obtain temperature distribution	4	2	2	1
13. a)	Judge on machinability and its index, usability for steel industry.	4	5	3	1
b)	Discuss why hot machining is suggested for machining alloy steels?	4	6	3	1
14. a)	Contrast between recovery, recrystallisation and grain growth phenomena.	4	4	4	1
b)	Distinguish ring rolling and conventional rolling.	4	4	4	1
15. a)	Explain the principle, working and applications of Guerin rubber forming.	4	2	5	1
b)	Explain why Wheelon rubber forming is chosen for making aircraft components.	4	3	5	1
16. a)	Interpret the rules for dry sliding friction?	4	5	1	1
b)	Explain the working of a Lathe tool dynamometer.	4	2	2	1

17. Answer any *two* of the following:				
a) Explain tool life criteria and elaborate on wear versus time curve.	4	6	3	1
b) Differentiate and explain stress-strain curves between engineering and true stresses and strains.	4	2	4	1
c) What are the conditions favourable for HVF application?	4	1	5	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	55%
2	Knowledge on application and analysis (Level-3 & 4)	20%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	25%

C3CG03CG03

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
M.E. (ECE: CBCS) I-Semester Main Examinations, January-2019
(Communication Engineering & Signal Processing)

Advanced Digital Modulation Techniques

Time: **3 hours**   Max. Marks: **60**

*Note: Answer ALL questions in **Part-A** and any **FIVE** from **Part-B***

Q. No	Stem of the Question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	How do you eliminate the Inter Symbol Interference (ISI) effect in digital communication?	2	2	1	1
2.	Why MSK is called shaped QPSK?	2	2	1	1
3.	Give the principle of operation of OFDM technique.	2	2	1	1
4.	List the benefits of OFDM technique.	2	2	2	2
5.	How the sensitivity of a system can be determined from eye pattern?	2	1	3	2
6.	What are the parameters required for OFDM system designing?	2	1	4	2
7.	Analyse how channel coding can achieve immunity against noise and other interferences?	2	3	2	3
8.	What are the advantages of CDMA technique?	2	1	2	3
9.	What is AWGN channel? Why its study is important?	2	2	2	3
10.	List the applications of smart antennas.	2	2	2	2
	Part-B (5 × 8 = 40 Marks)				
11. a)	Illustrate the working of different phase modulation schemes?	4	2	1	2
b)	Derive the power spectral density of linearly modulated signals.	4	3	2	2
12. a)	Explain in detail about optimum demodulation of digital signals in presence of ISI and AWGN.	4	2	3	2
b)	Describe how a binary FSK modulated signal can be demodulated non coherently?	4	3	3	2
13. a)	Demonstrate the working of OFDM system with the help of neat block diagram.	4	2	2	2
b)	How synchronization is established in FH-SS technique in wireless communications?	4	2	2	3
14. a)	Explain how RAKE demodulator helps under multipath fading conditions.	4	3	3	3
b)	Discuss the applications of DS-SS technique in wireless communications?	4	4	5	3
15. a)	How spatial diversity is achieved in a MIMO antenna system?	4	3	4	3
b)	Find the error probability for transmission of a symbol or message for a general vector channel?	4	3	4	3

16. a)	Derive the SNR of the matched filter in frequency domain.	4	5	4	3
b)	Analyse and compare the power spectra of ASK, FSK and PSK modulation techniques.	4	4	4	3
17.	Answer any *two* of the following:				
a)	Distinguish between carrier synchronization and Timing synchronization.	4	3	3	3
b)	Need for differential space time block codes.	4	2	2	2
c)	Slow Vs fast hopping techniques.	4	3	3	3

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	48%
2	Knowledge on application and analysis (Level-3 & 4)	42%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	10%

৯৯৯৯৯৯

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
M.Tech. (CSE: CBCS) I-Semester Main Examinations, December-2018
Mathematical Foundations of Computer Science

Time: **3 hours**   Max. Marks: **60**

Note: i) Answer ALL questions in Part-A and any FIVE from Part-B
ii) Use of Normal, t, F, x^2 - distribution tables are permitted.

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	What is random variable? Give example.	2	2	1	3
2.	How mean and variance are found using moment generating function of a distribution?	2	2	1	3
3.	State Central Limit theorem.	2	1	2	3
4.	Find variance of Uniform Distribution.	2	3	2	3
5.	Define Random Sampling and give example.	2	2	3	3
6.	What do you mean by an Estimator?	2	2	3	3
7.	Distinguish between Parameters and Statistics.	2	2	4	3
8.	State Level of Significance.	2	1	4	3
9.	Explain Regression Analysis.	2	2	5	3
10.	Explain method of Least Squares.	2	2	5	3
	Part-B (5 × 8 = 40 Marks)				
11. a)	A continuous RV X has a pdf $f(x) = kx^2 e^{-x}; x \geq 0$. Find k, mean and variance.	4	3	1	3
b)	For the joint probability distribution of two random variables X and Y given below:	4	3	1	3

Y \ X	1	2	3	4	Total
1	4/36	3/36	2/36	1/36	10/36
2	1/36	3/36	3/36	2/36	9/36
3	5/36	1/36	1/36	1/36	8/36
4	1/36	2/36	1/36	5/36	9/36
Total	11/36	9/36	7/36	9/36	1

Find : i)   The marginal distributions of X and Y, and
         ii) Conditional distribution of X given the value of Y = 1 and that of Y given the value of X = 2.

		M	L	CO	PO
12. a)	In a distribution exactly normal, 10.03% of the items are under 25 kilogram weight and 89.97% of the items are under 70 kilogram weight. What are the mean and standard deviation of the distribution?	4	2	2	3
b)	The daily consumption of milk in a city, in excess of 20,000 litres, is approximately distributed as a Gamma variate with parameters $a = \frac{1}{1000}$ and $\lambda = 2$. The city has a daily stock of 30,000 litres. What is the probability that the stock is insufficient on a particular day?	4	5	2	3
13. a)	Let $X_1, \ldots X_n$ be a random sample of size n from a normal distribution with known variance. Obtain the maximum likelihood estimator of μ.	4	2	3	3
b)	Let $x_1, \ldots x_n$ be the observed values of a random sample of size n from the exponential distribution $f(x; \beta) = \beta^{-1} e^{-x/\beta}$ for x > 0. Find the maximum likelihood estimator of β.	4	2	3	3

14. a)	A random sample of 10 boys had the following: I.Q.'s: 70, 120, 110, 101, 88, 83, 95, 98, 107, 100. Do these data support the assumption of a population mean I.Q. of 100? Find a reasonable range in which most of the mean I.Q. values of samples of 10 boys lie.	4	3	4	3
b)	Two sample polls of votes for two candidates A and B for public office are taken, one from among the residence of rural areas. The results are given in the table. Examine whether the nature of the area is related to voting preference in this election.	4	4	4	3

Area	Votes for		Total
	A	B	
Rural	620	380	1000
Urban	550	450	1000
Total	1170	830	2000

15. a)	The following are data on the number of twists required to break a certain kind of forged alloy bar and the percentages of two alloying elements present in the metal:	4	4	5	3

Number of Twists y	Percentage of element A x_1	Percentage of element B x_2
41	1	5
49	2	5
69	3	5
65	4	5
40	1	10
50	2	10
58	3	10
57	4	10
31	1	15
36	2	15
44	3	15
57	4	15
19	1	20
31	2	20
33	3	20
43	4	20

Fit a least squares regression plane and use its equation to estimate the number of twists required to break one of the bars when $x_1 = 2.5$ and $x_2 = 12$.

b)	The following are the numbers of minutes it took 10 machines to assemble a piece of machinery in the morning, x, and in the late afternoon, y:	4	3	5	3

x	y
11.1	10.9
10.3	14.2
12.0	13.8
15.1	21.5
13.7	13.2
18.5	21.1
17.3	16.4
14.2	19.3
14.8	17.4
15.3	19.0

Calculate coefficient of correlation.

16. a)	For the bivariate probability distribution of X and Y ,							4	3	1	3

Y X	1	2	3	4	5	6
0	0	0	1/32	2/32	2/32	3/32
1	1/16	1/16	1/8	1/8	1/8	1/8
2	1/32	1/32	1/64	1/64	0	2/64

find : i) $P(X \le 1, Y = 2)$,
ii) $P(X \le 1)$,
iii) $P(Y = 3)$, and
iv) $P(X < 3, Y \le 4)$.

b) X is a normal variate with mean 30 and S.D. 5. Find the probabilities that	4	2	2	3

i) $26 \le X \le 40$, ii) $X \ge 45$, and iii) $|X - 30| > 5$.

17. Answer any *two* of the following:

a) Explain how to generate Estimators by using maximum Likelihood method.	4	2	3	3
b) The following random samples are measurements of the heat producing capacity (in millions of calories per ton) of specimens of coal from two mines:	4	3	4	3

Mine 1:	8,260	8,130	8,350	8,070	8,340	
Mine 2:	7,950	7,890	7,900	8,140	7,920	7,840

Use the 0.01 level of significance to test whether the difference between the Means of these two samples is significant.

c) The expected remaining life of an electronic part is believed to be related to the age of the part. The ages of 10 of these parts that were in use on a certain date were recorded in operating hours. When each part burned out, the elapsed time was recorded. The results were as follows:	4	2	5	3

Age of Part (in hrs):	40	65	90	5	30	10	80	85	70	25
Remaining Life (in hrs):	30	20	10	80	40	65	15	15	20	50

Determine the coefficients of regression and regression curve using the non-linear form $Y = ab^X$.

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	52.5
2	Knowledge on application and analysis (Level-3 & 4)	42.5
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	5.0

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
M.E. (ECE: CBCS) I-Semester Main Examinations, January-2018

(Embedded Systems & VLSI Design)

Embedded Systems Design

Time: **3** hours

Max. Marks: **60**

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Q. No	Stem of the Question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	List the real-time requirements of an embedded system.	2	2	1	1
2.	Name the various forms of memory in embedded system and the functions assigned to them.	2	1	1	1
3.	Interface 8051µc to the seven segment display unit.	2	3	2	2
4.	What is PWM? How it is used in DC motor control?	2	2	2	2
5.	Write the function of different conditional Flags in ARM processor.	2	1	3	1
6.	Define Pipeline. List its advantages.	2	2	4	1
7.	Outline the features of Serial Peripheral Interface (SPI).	2	2	5	1
8.	What are the modes of data transfer used in USB?	2	1	5	1
9.	Justify the use of JTAG in embedded debugging.	2	2	4	3
10.	Summarize the need of RTOS in Embedded system Design.	2	2	4	1
	Part-B (5 × 8 = 40 Marks)				
11. a)	Explain the classification of embedded systems with examples.	5	2	1	1
b)	Compare different processor technology in embedded system design.	3	2	1	2
12. a)	Analyze the circuit of 4x3 Keyboard and show the interfacing to 8051 with necessary flow chart.	5	4	2	3
b)	Describe the 8051 connection to the stepper motor and write C program to rotate it continuously.	3	4	2	3
13. a)	Explain the hardware core extensions or the components placed next to the ARM core.	5	3	3	1
b)	Distinguish between ARM Processor families.	3	4	3	2
14. a)	Demonstrate the signal using a transfer of byte when using the I²C bus and also the format of bits at the I²C bus with diagram.	4	3	5	2
b)	Discuss the ETHERNET interface standard protocol for Embedded system Design.	4	1	5	1
15. a)	Explain hardware debugging and its tools used in embedded product development.	4	2	4	1
b)	Explain about Functional key scheduling embedded software architecture.	4	3	4	3

			M	L	CO	PO
16.	a)	Explain the architecture of CISC processor. Mention its advantages and disadvantages.	4	2	1	1
	b)	Write a program to display "ELECTRONICS" by interfacing LCD using delay routines with 8051µc.	4	5	2	2
17.		Answer any *two* of the following:				
	a)	Describe the steps how ARM processor handles the interrupts. Mention its vector table.	4	2	3	1
	b)	Explain the PCI parallel communication protocol.	4	2	5	1
	c)	With the help of an example explain the Round Robin architecture without interrupts.	4	2	4	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	62.5
2	Knowledge on application and analysis (Level-3 & 4)	32.5
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	5.0

ॐॐॐॐॐ

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.E. (ECE: CBCS) I-Semester Main Examinations, January-2019

(Communication Engineering & Signal Processing)

Advanced Digital Signal Processing

Time: **3 hours**   Max. Marks: **60**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	What is the advantage of Goertzel algorithm to compute FFT? Mention a practical application of it.	2	1	1	1
2.	Find the number of additions, multiplications and memory locations required for direct form II realization of an IIR digital filter transfer function having numerator polynomial of order M and denominator polynomial of order N.	2	1	2	1
3.	List the advantages of Multirate Signal Processing.	2	1	3	1
4.	List the conditions in terms of analysis and synthesis filters for alias free and perfect reconstruction of two channel QMF bank.	2	4	4	3
5.	How do you find approximation coefficients in DWT?	2	1	5	1
6.	Explain dilation equation using scaling and wavelet coefficients.	2	1	5	1
7.	Compare the computational complexity of LMS and RLS algorithms for adaptive filters.	2	4	6	1
8.	Find first order optimal predictor coefficients and minimum mean square error for a real WSS process with autocorrelation sequence $\gamma_{xx}(0) = 0.1482, \gamma_{xx}(1) = 0.05$.	2	1	6	3
9.	List the performance measures for power spectrum estimator.	2	1	7	1
10.	Give the advantages of parametric methods over non-parametric methods for power spectrum estimation.	2	1	7	1
	Part-B (5 × 8 = 40 Marks)				
11. a)	Compute the linear convolution of the following two sequences $x_1(n) = (3,2,1,2)$ and $x_2(n) = (1,2,1,2)$.	3	1	1	1
b)	Develop a lowpass Butterworth digital filter with 3dB cutoff frequency at 50Hz and attenuation of at least 10dB for frequency larger than 100Hz. Sampling frequency: 500Hz.	5	3	2	1
12. a)	Develop a two-stage decimator to convert a single bit stream at 3072 kHz into a multi-bit stream at 48 kHz. for which the pass band and stop band ripples for the decimator are 0.001 and 0.0001, respectively. The pass band ranges from 0-20kHz.	5	3	3	2
b)	Consider a two channel QMF bank with the analysis and synthesis filters given by $H_0(z) = 2 + 6z^{-1} + z^{-2} + 5z^{-3} + z^{-5}, H_1(z) = H_0(-z); \ G_0(z) = H_0(z); G_1(z) = -H_1(z)$. Examine the QMF bank for alias-free and perfect reconstruction.	3	4	4	1

		M	L	CO	PO
13. a)	Describe wavelet reconstruction process.	4	1	5	1
b)	Determine coefficients of Haar wavelet decomposition and reconstruction filters.	4	5	5	3
14. a)	Explain RLS algorithm for adaptive filters.	4	2	6	1
b)	Find second order optimal predictor coefficients and minimum mean square error for a real WSS process with autocorrelation sequence. $\gamma_{xx}(k) = \left(\frac{24}{5}\right) \times 2^{-\lvert k \rvert} - \left(\frac{27}{10}\right) \times 3^{-\lvert k \rvert}$	4	1	6	3
15. a)	Explain Burg method using AR model for power spectrum estimation.	4	1	7	1
b)	Analyze and compare the key features of different power spectrum estimation techniques.	4	1	7	2
16. a)	Determine DFT of the sequence $x(n) = \{1,2,3,4\}$ using the Goertzel algorithm.	4	4	1	1
b)	Develop a scheme with brief description for sampling rate conversion by non integer factor.	4	3	3	3
17.	Answer any *two* of the following:				
a)	Find the wavelets orthogonality and regularity conditions for N = 2.	4	1	5	1
b)	Let s(n) be AR(1) process with an autocorrelation sequence $r_s(k) = (0.6)^{\lvert k \rvert}$, and suppose that s(n) is corrupted with an uncorrelated white noise having variance $\sigma_w^2 = 1$ The observed signal is $x(n)=s(n)+w(n)$. Develop a first order Wiener filter.	4	3	6	3
c)	Explain Eigen analysis method for power spectrum estimation.	4	1	7	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	58.75%
2	Knowledge on application and analysis (Level-3 & 4)	36.25%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	5%

ೞೞೞೞ೮ಬಬಬ

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.E. (Mech. Engg.: CBCS) I-Semester Main Examinations, January-2018

(Advanced Design & Manufacturing)

Mathematical Methods for Engineers

Time: **3 hours**   Max. Marks: **60**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q. No	Stem of the Question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Find the directional derivative of $\emptyset = x^2yz + 4xz^2$ at (1,-2,1) in the direction of $2\mathbf{i} - \mathbf{j} - 2\mathbf{k}$.	2	1	1	10
2.	If $u\mathbf{F} = \nabla v$ where u and v are scalar fields and $\mathbf{F}$ is a vector field, show that $\mathbf{F}.\text{curl }\mathbf{F} = 0$.	2	2	1	10
3.	Define Solenoidal and Irrotational vectors.	2	1	2	10
4.	Express the relationship between the associated tensors $\bar{A}^{ikl}$ and A_{pqr}	2	2	2	10
5.	Write the mathematical formula for Cramer's Rule.	2	1	3	10
6.	Briefly explain LU decomposition.	2	2	3	10
7.	Compute the Laplace transform of $e^{4t} \sin 2t \cos t$.	2	2	4	10
8.	Find the Laplace transform of $\sin at$ using basic definition.	2	1	4	10
9.	Find the Fourier series of the function defined by $f(x) = \pi, \; -\pi \le x \le \pi$	2	2	5	10
10.	Find the Fourier series for the function defined by $$f(x) = 0, -\pi \le x < 0$$ $$f(x) = \sin x, 0 \le x \le \pi$$	2	2	5	10
	Part-B (5 × 8= 40 Marks)				
11. a)	Show that $\nabla \times (\nabla \times \bar{A}) = \nabla(\nabla.\bar{A}) - \nabla^2\bar{A}$	5	2	1	10
b)	Find the unit normal vector to $x^2 + y^2 + z^2 = 5$ at (0,1,2)	3	1	1	10
12. a)	Let A^{pq}_{rst} be a tensor. Find the rank of A^{pq}_{rst} when p = t and q = s	5	2	2	10
b)	Using tensor notation show that $curl\ grad\ \varphi = 0$	3	3	2	5
13. a)	Solve the system of equations by Gauss-Seidal method for $x^{(1)}, y^{(1)}, z^{(1)}, w^{(1)}, x^{(2)}, y^{(2)}, z^{(2)}, w^{(2)}$ for the following system of equations $3.49x - 0.25y + 9.21z + 0.05w = 1.32$ $5.25x - 1.77y + 8.97z + 0.1w = 4.35$ $1.73x - 2.1y + 3.37z + 7.23w = 12.49$ $1.23x - 6.54y + 2.87z + 2.41w = 11.32$ Superscripts indicate iterations.	5	4	3	5
b)	Find *a, b* and *c* so that the linear system $x + 2y - 3z = a$ $2x + 3y + 3z = b$ $5x + 9y - 6z = c$ is consistent.	3	3	3	5

			M	L	CO	PO
14.	a)	Solve the initial value problem $y'' + 4y' + 3y = e^{-t}$, $y(0) = y'(0) = 1$ by using Laplace transforms.	5	3	4	5
	b)	Find the inverse Laplace transforms of $\dfrac{4s+5}{(s-1)^2\ (s+2)}$	3	2	4	10
15.	a)	A tightly stretched string with fixed end points $x = 0$ and $x = l$ is initially at rest in its equilibrium position. If it is vibrating by giving to each of its end points a velocity $\lambda x(l - x)$, find the displacement of the string at any distance x from one end at any time t.	5	5	5	12
	b)	Expand $f(x)$ in a Fourier series on the interval $-2 \le x < 2$ if $f(x) = 0$ for $-2 \le x < 0$ and $f(x) = 1$ for $0 \le x < 2$	3	4	5	5
16.	a)	Prove that $curl\ curl\ F = grad\ div\ F - \Delta^2 F$	4	1	1	10
	b)	Verify the identity $A \cdot (B \times C) = B \cdot (C \times A)$ using tensor notation.	4	2	2	10
17.		Answer any *two* of the following:				
	a)	Find the Eigen values and corresponding Eigen vectors of matrix $A = \begin{bmatrix} 1 & -3 & 2 \\ 4 & 4 & -1 \\ 6 & 3 & 4 \end{bmatrix}$	4	6	3	12
	b)	Find $L^{-1}\left\{\dfrac{\frac{s}{2}+\frac{5}{3}}{s^2+5s+6}\right\}$	4	3	4	5
	c)	Given the non-orthogonal basis $a_1 = i - j - k,\ a_2 = i + j + k,\ a_3 = -i + 2k,$ use the Gram-Schmidt orthogonalization process to find the orthonormal basis.	4	2	5	10

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	58.75
2	Knowledge on application and analysis (Level-3 & 4)	30.00
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	11.25

సౌసౌసౌసౌసౌసౌ

Hall Ticket Number:

| | | | | | | | | | | | | |

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.E. (EEE: CBCS) I-Semester Main Examinations, January-2018

(Power Systems & Power Electronics)

Advanced Computer Methods in Power Systems

Time: **3 hours**   Max. Marks: **60**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q. No	Stem of the Question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Define the following terms i) Link ii) Basic loop	2	1	1,2	1
2.	Show that $A_bK^t=U$	2	2	1,2	1,2
3.	What do you mean by triangularization?	2	1	1,2	1,2
4.	Write expressions for Z_{qi} and Z_{qq} when added element is a branch. Assume P is reference node?	2	2	1,2	1,2
5.	What is the importance of load flow studies in power systems?	2	2	3	1,3
6.	What is acceleration factor? In which method of load flow this factor is recommended?	2	2	3	1,3
7.	Write the importance of Clark's transformation matrix?	2	2	1,2	1,2
8.	Write the equations for Z_{il}^{abc} and Z_{ll}^{abc}	2	3	1,2	1,2
9.	What are the different types of faults and write the effect of each fault on the power system?	2	2	2	1,2
10.	Estimate the fault level when a fault takes place in power system?	2	3	1,2	1,2
	Part-B (5 × 8 = 40 Marks)				
11. a)	The transpose of the matrix A is given by A^t $$=\begin{bmatrix} -1 & 1 & 0 & 1 & 0 & 0 \\ 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & -1 & 1 & 0 \\ 0 & 0 & 0 & -1 & 1 & 1 \end{bmatrix}$$ Draw its oriented graph and obtain B, $\bar{B}$, C, $\bar{C}$ and K matrices of the network?	6	4	1,2	1,2
b)	Write the equation for Zloop by singular transformation?	2	2	1,2	1,2
12. a)	Find Zbus for the system shown in fig.	4	5	2	1,2
b)	Explain the algorithm for formation of Zbus matrix	4	2	3	1,2

			M	L	CO	PO
13.	a)	With the help of flowchart, explain how to obtain load flow solution using Fast decoupled load flow method?	5	2	3	1,3,4
	b)	Explain the classification of buses in load flow studies.	3	2	3	1,2
14.	a)	Explain an algorithm for formation of three-phase bus impedance matrix for addition of branch?	5	4	3	1,3,4
	b)	What are transformation matrices and write their significance.	3	2	2	1,2
15.	a)	Derive the expressions for fault currents, voltages when 3-phase to ground fault occurs at bus P. Also write flowchart?	5	4	1,2	1,2
	b)	What are the basic assumptions made in short circuit studies.	3	2	2	1,2
16.	a)	For the network shown in fig., obtain the bus admittance matrix by singular transformation?	5	5	1,2	1,2

			M	L	CO	PO
	b)	What are the advantages of Zbus building algorithm?	3	2	1,2	1,3
17.		Answer any *two* of the following:				
	a)	Compare the various methods of load flow study?	4	1	1,2	1,3
	b)	Show that impedance matrix is same both in symmetrical components and Clark's components for a balanced three-phase stationary elements?	4	2	1,2	1,2
	c)	Derive Z_F^{abc} for LLG fault on phases b and c?	4	3	1,2	1,2

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	58.75
2	Knowledge on application and analysis (Level-3 & 4)	30.0
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	11.25

*****