

R3560

Sub. Code

2BV3G1

B.Voc. DEGREE EXAMINATION, NOVEMBER – 2025

Third Semester

Fashion Technology/Software Development

TECHNICAL ENGLISH

(Common for B.Voc.FT/SD)

(CBCS – 2022 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. She wore a _____ dress. (CO1, K1)
(a) beautiful (b) beauty
(c) beautifully (d) more beautiful
2. I _____ dropped all the papers I was holding. (CO1, K3)
(a) often (b) early
(c) late (d) almost
3. Choose the correct spelling (CO2, K1)
(a) calender (b) calendar
(c) callender (d) callander

4. Select the incorrectly spelt word (CO2, K1)
(a) copywrite (b) copyright
(c) copy (d) right
5. I _____ working since 2020. (CO3, K3)
(a) have (b) have been
(c) had (d) has
6. Ajmel is a teacher. This is a _____ sentence. (CO3, K4)
(a) SVA (b) SVO
(c) SVC (d) SVOC
7. Add suffix and complete the word “courage” (CO4, K3)
(a) courageous (b) courages
(c) courageftul (d) courageious
8. _____ you come with me? (CO4, K3)
(a) may (b) might
(c) can (d) will
9. I always help my mother before _____ to school. (CO5, K3)
(a) going (b) to go
(c) go (d) will go
10. I prefer _____ historical novels. (CO5, K3)
(a) reads (b) read
(c) reading (d) to read

Part B

(5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Identify the adverbs. (CO1, K2)
- (i) He drives the car rashly.
 - (ii) He goes to Chennai frequently.
 - (iii) Fortunately, he recorded his brother's victory.
 - (iv) This situation is quite serious.
 - (v) She speaks gently.

Or

- (b) Identify the adjectives. (CO1, K4)
- (i) He writes meaningless letters.
 - (ii) Ben is an adorable baby.
 - (iii) This glass is breakable.
 - (iv) This soup is not edible.
 - (v) My job is worse than yours.

12. (a) Identify the sentence pattern: (CO2, K2)
- (i) I came in the morning
 - (ii) She sings sweetly
 - (iii) The dog jumps into the well.
 - (iv) The sun shines
 - (v) My grandfather told me a story.

Or

(b) Form a sentence each of the below given sentence pattern. (CO2, K6)

(i) SV

(ii) SVC

(iii) SVOC

(iv) SVOA

(v) SVOO

13. Write a paragraph by explaining the following proverbs.

(CO3, K6)

(a) Time and Tide waits for none

Or

(b) All that glitters is not gold

14. (a) Change the following into active voice: (CO4, K4)

(i) The cat was chased by the dog.

(ii) Sweets are liked by children.

(iii) The ball was thrown by Virat.

(iv) The smuggler was arrested by the police.

(v) Zara is loved by everyone.

Or

(b) Write any five Homonyms. (CO4, K1)

15. (a) Examine the Simple present tense and present continuous tense with examples. (CO5, K4)

Or

(b) Define Palindromes with examples. (CO5, K4)

Part C

(5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Define Adverb and explains its types with examples. (CO1, K2)

Or

- (b) Define Noun and its types with examples. (CO1, K2)

17. (a) Define Note Taking with examples. (CO2, K2)

Or

- (b) Correct the errors in the following sentences and rewrite them. (CO2, K1)

(i) They are gentle or they will not hurt the butterfly.

(ii) You must exercise but you will get fat.

(iii) She will fail so she doesn't study.

(iv) He or Raju are guilty.

(v) Have you ever being to Kerala?

(vi) The mans purse was lost in the bus.

(vii) My mother cooks rice yesterday.

(viii) They has a party

18. (a) Arrange the words in correct order to form a sentence (CO3, K6)

(i) dog Rahul with his pet playing enjoys.

(ii) to the company goods Vietnam exports.

- (iii) she interested that was in proposal said she the.
- (iv) was performance impressed with quite his
- (v) the please not do on grass step.
- (vi) every delicious father cooks evening pasta.
- (vii) brother an wants be my astronaut to.
- (viii) everything will sense make perfect someday.

Or

- (b) Write sentences using the following idiomatic expressions : (CO3, K6)
- (i) The ball is in your court
 - (ii) Spill the beans
 - (iii) Pull someone's leg
 - (iv) Cat out of the bag
 - (v) Once in a blue moon
 - (vi) Come rain or shine
 - (vii) Fish out of the boiling bowl.
 - (viii) Cock and the bull story.

19. Write an essay on any one of the following:

(CO4, K6)

- (a) Education should be free.

Or

- (b) Childhood memories.

20. (a) Write a detailed report to a newspaper reporting about the poor condition of road in your locality.

(CO5, K6)

Or

- (b) Write a précis of the following passage: (CO5, K6)

The internet has revolutionized the way we communicate and access information. With the click of a button, we can connect with people around the world, share ideas, and stay informed about current events. This instant access to vast amounts of information has both positive and negative implications. On the positive side, it allows for unprecedented global connectivity and the democratization of knowledge. However, it also raises concerns about privacy, misinformation, and the potential for online abuse. As we navigate this digital age, it is essential to strike a balance between the benefits and challenges posed by the internet.

R3565

Sub. Code

2BV5G3

B.Voc. DEGREE EXAMINATION, NOVEMBER – 2025

Fifth Semester

Fashion Technology/Software Development

FUNDAMENTALS OF DIGITAL PRIVACY

(Common for B.Voc. (FT/SD))

(CBCS – 2022 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. What is the purpose of a strong password policy?
(CO1, K1)
 - (a) To make passwords easy to remember
 - (b) To prevent unauthorized access
 - (c) To simplify user authentication
 - (d) To eliminate the need for encryption

2. Which of the following is an example of social engineering?
(CO1, K1)
 - (a) Installing antivirus software
 - (b) Phishing emails
 - (c) Setting up a firewall
 - (d) Encrypting files

3. What is the key feature of HTTPS compared to HTTP?
(CO2, K2)
- (a) Increased browsing speed
 - (b) Data encryption
 - (c) Reduced bandwidth usage
 - (d) User authentication
4. Which type of malware holds data hostage until a ransom is paid?
(CO2, K2)
- (a) Spyware
 - (b) Adware
 - (c) Ransomware
 - (d) Trojan
5. What is the primary purpose of parental controls?
(CO3, K3)
- (a) To improve internet speed
 - (b) To monitor children's online activity
 - (c) To limit email access
 - (d) To block advertisements
6. What does "netiquette" refer to?
(CO3, K3)
- (a) Network optimization techniques
 - (b) Online behavior etiquette
 - (c) Internet speed enhancement
 - (d) Social media privacy policies

7. Which of the following is NOT a common feature of firewall software? (CO4, K4)
- (a) Blocking unauthorized access
 - (b) Detecting malware
 - (c) Encrypting files
 - (d) Allowing specific IP addresses
8. Which of the following can help identify fraudulent job postings? (CO4, K4)
- (a) Researching the company's background
 - (b) Ignoring the job description
 - (c) Avoiding online job portals
 - (d) Applying without verification
9. What is the term for creating fake websites to steal user information? (CO5, K5)
- (a) Phishing
 - (b) Spoofing
 - (c) Hacking
 - (d) Spamming
10. What is a digital legacy? (CO5, K5)
- (a) Online achievements
 - (b) Digital assets left after death
 - (c) Cloud storage backup
 - (d) Personal online privacy settings

Part B

(5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Describe the importance of privacy in the digital world with examples. (CO1, K1)

Or

- (b) Explain the steps to protect personal data when using public Wi-Fi. (CO1, K1)

12. (a) Define malware and categorize its types with suitable examples. (CO2, K2)

Or

- (b) Discuss the significance of keeping software up-to-date for digital safety. (CO2, K2)

13. (a) Analyze the role of email security settings in preventing data breaches. (CO3, K3)

Or

- (b) Summarize the risks of using unsecured email attachments. (CO3, K3)

14. (a) Illustrate the methods for detecting and avoiding social engineering attacks. (CO4, K4)

Or

- (b) Compare the impact of phishing and ransomware on organizations. (CO4, K4)

15. (a) Evaluate the importance of cleaning up digital presence to protect online reputation. (CO5, K5)

Or

- (b) Explain strategies for parents to educate children about online predators. (CO5, K5)

Part C

(5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Discuss the ethical implications of monitoring online activity by organizations. (CO1, K1)

Or

- (b) Evaluate the role of GDPR in ensuring data privacy across digital platforms. (CO1, K1)

17. (a) Analyze the significance of disaster recovery plans for organizations in combating cyber threats. (CO2, K2)

Or

- (b) Create a plan for securing social media accounts from hacking attempts. (CO2, K2)

18. (a) Examine the impact of identity theft on individuals and organizations and suggest preventive measures. (CO3, K3)

Or

- (b) Discuss the challenges and benefits of using multi-factor authentication for online security. (CO3, K3)

19. (a) Explain the concept of “digital legacies” and their importance in the modern digital age. (CO4, K4)

Or

- (b) Discuss the steps to recover from a security breach and rebuild trust with stakeholders. (CO4, K4)

20. (a) Evaluate the role of education and awareness in preventing cyberbullying among teenagers.
(CO5, K5)

Or

- (b) Analyze the responsibilities of individuals in maintaining “netiquette” during online interactions.
(CO5, K5)
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R3566

Sub. Code

2BS3C1

B.Voc DEGREE EXAMINATION, NOVEMBER – 2025

Third Semester

Software Development

FUNDAMENTALS OF OPERATING SYSTEMS

(CBCS – 2022 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Which of the following is not an operating system?
(CO1, K1)
 - (a) Windows
 - (b) Linux
 - (c) Oracle
 - (d) DOS

2. When was the first operating system developed?
(CO1, K2)
 - (a) 1948
 - (b) 1949
 - (c) 1950
 - (d) 1951

3. What type of scheduling is round-robin scheduling?
(CO2, K2)
 - (a) Linear data scheduling
 - (b) Non-linear data scheduling
 - (c) Preemptive scheduling
 - (d) Non-preemptive scheduling

4. Which one of the following is the address generated by CPU? (CO2, K1)
- (a) Physical address
 - (b) Absolute address
 - (c) Logical address
 - (d) None of the mentioned
5. Paging increases the _____ time. (CO3, K1)
- (a) Waiting
 - (b) Execution
 - (c) Context – switch
 - (d) All of the mentioned
6. A deadlock avoidance algorithm dynamically examines the _____ to ensure that a circular wait condition can never exist. (CO3, K1)
- (a) Operating system
 - (b) Resources
 - (c) System storage state
 - (d) Resource allocation state
7. The size of virtual memory is based on which of the following? (CO4, K2)
- (a) CPU
 - (b) RAM
 - (c) Address bus
 - (d) Data bus

8. What type of memory stores data in a swap file on a hard drive? (CO4, K2)
- (a) Secondary memory
 - (b) Virtual memory
 - (c) Low memory
 - (d) RAM
9. The operating system keeps a small table containing information about all open files called _____ (CO5, K1)
- (a) File table (b) Directory table
 - (c) Open-file table (d) System table
10. In a GUI, what does the “minimize’ button typically do? (CO5, K2)
- (a) Close the application
 - (b) Maximize the application window
 - (c) Reduce the application window to the taskbar or docks
 - (d) Create a new document

Part B

(5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Explain the concept of booting in an operating system and describe its types. (CO1, K5)

Or

- (b) Examine the key functions performed by an operating system. (CO1, K4)

12. (a) Discuss the concept of Inter process communication in an operating system with a neat structure. (CO2, K5)

Or

- (b) Explain in brief about different scheduling criteria used in an operating system. (CO2, K5)
13. (a) Describe the concept of segmentation in an operating system with a neat structure. (CO3, K5)

Or

- (b) Write short notes on file protection mechanisms in an operating system. (CO3, K4)
14. (a) Highlight the components of GUI in an operating system. (CO4, K5)

Or

- (b) Write a brief note on various threats faced by an operating system. (CO4, K4)
15. (a) List out the major features of UNIX operating system. (CO5, K4)

Or

- (b) Discuss in brief about the structure and key aspects of Unix operating system. (CO5, K5)

Part C

(5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Discuss in detail about the structure of an Operating system with neat diagram. (CO1, K5)

Or

- (b) Explain in detail about the evolution and history of Operating system. (CO1, K5)

17. (a) Elaborate in detail about different Scheduling algorithms used in Operating systems. (CO2, K4)

Or

- (b) Elaborate in detail about the concept of deadlock avoidance with an example. (CO2, K5)

18. (a) Discuss in detail about various Memory management techniques used in an operating system. (CO3, K4)

Or

- (b) Explain in detail about various file allocation methods in operating system. (CO3, K5)

19. (a) Discuss in detail about the Authentication mechanisms employed in operating systems. (CO4, K4)

Or

- (b) Elaborate in detail about the Encryption strategies in operating systems and their significance. (CO4, K5)

20. (a) Explain in detail about the Unix file system with a neat structure. (CO5, K4)

Or

- (b) Demonstrate the usage of essential Unix commands with its purpose. (CO5, K4)
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R3567

Sub. Code

2BS5C1

B.Voc. DEGREE EXAMINATION, NOVEMBER – 2025

Fifth Semester

Software Development

PROGRAMMING WITH JAVA

(CBCS – 2022 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. Primary benefit of encapsulation is called _____ (CO1, K2)
 - (a) Code reusability
 - (b) Improved performance
 - (c) Data hiding and abstraction
 - (d) Increased complexity

2. The programmer instructs the compiler to convert a _____ using explicit type casting. (CO1, K2)
 - (a) Larger type to larger one
 - (b) Smaller type to larger one
 - (c) Larger type to smaller one
 - (d) Same to same

3. Which of the following will return in array length
(CO2, K2)
- (a) Data type
 - (b) Max value
 - (c) Number of element
 - (d) First index
4. For method overriding _____ must be same
(CO2, K2)
- (a) Name and return type
 - (b) Name, return type and parameters
 - (c) Return type and parameters
 - (d) Only name
5. _____ attribute specifies the applet class file in the
<applet> tag. (CO3, K1)
- (a) src
 - (b) code
 - (c) name
 - (d) file
6. Which the following method is called when the applet is
initialized and ready to run? (CO3, K1)
- (a) init ()
 - (b) start ()
 - (c) paint ()
 - (d) run ()

7. _____ method is used to start the execution of a thread. (CO4, K4)
- (a) run() (b) start()
(c) execute() (d) begin()
8. Which of the following increases the likelihood of a deadlock? (CO4, K4)
- (a) Synchronizing single methods
(b) Using separate locks for each resource
(c) Nested synchronization
(d) Using concurrent collections
9. Subclass of the Reader class is called _____ (CO5, K5)
- (a) InputStreamWriter
(b) BufferedReader
(c) FileWriter
(d) PrintWriter
10. _____ is the package name for JDBC-ODBC Bridge. (CO5, K5)
- (a) java.sql (b) java.odbc
(c) sun.jdbc.odbc (d) javax.sql

Part B

(5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Difference between C++ and Java. (CO1, K2)

Or

- (b) Describe about String Buffer Class with example.

(CO1, K2)

12. (a) Write a note on (i) Final variable (ii) Final methods.
(CO2, K2)

Or

- (b) Explain about Abstract Methods and classes in detail. (CO2, K2)

13. (a) How to use methods in Graphics class? Explain.
(CO3, K4)

Or

- (b) Write short notes on AWT Events. (CO3, K4)

14. (a) Describe about 'throw' and 'throws' statement with example. (CO4, K4)

Or

- (b) How do we set priorities for Thread? Explain.
(CO4, K4)

15. (a) How to work with Output Stream? Explain.
(CO5, K5)

Or

- (b) Describe about the types of JDBC drivers. (CO5, K5)

Part C

(5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) Illustrate the structure of Java program in detail.

(CO1, K2)

Or

- (b) Write a detailed note on IF and SWITCH statements with example.
(CO1, K2)

17. (a) Explain about Inheritance and their types in detail.
(CO2, K2)

Or

- (b) Write a Java program to Calculate different shapes of area using method overloading.
(CO2, K2)

18. (a) Discuss about the steps to involved in developing and execution of a Simple Applet.
(CO3, K4)

Or

- (b) Explain about Event Handling Methods with suitable example.
(CO3, K4)

19. (a) Write a Java program to display various exceptions using chain of Catch blocks. (CO4, K4)

Or

- (b) Write a note on:

(i) Synchronization

(ii) Deadlock. (CO4, K4)

20. (a) Discuss the procedure to read and write the classes using I/O Streams. (CO5, K5)

Or

- (b) Write the java program to display employee details using JDBC-ODBC database. (CO5, K5)
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R3568

Sub. Code

2BS5E1

B.Voc. DEGREE EXAMINATION, NOVEMBER – 2025

Fifth Semester

Software Development

Elective — OPTIMIZATION TECHNIQUES

(CBCS – 2022 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** the following objective type questions by choosing the correct option.

1. If the objective function and all the constraints are linear functions of the design variables, then it is called _____ problem. (CO1, K3)
 - (a) Linear programming (LP)
 - (b) Non-linear Programming (NLP)
 - (c) Quadratic problem
 - (d) Geometric problem
2. If all a_{ij} values in the incoming variable column of the simplex table are negative, then _____. (CO1, K3)
 - (a) solution is unbounded
 - (b) there are multiple solutions
 - (c) there exist no solution
 - (d) the solution is degenerate

3. An alternative optimal solution to a minimization transportation problem exists whenever opportunity cost corresponding to unused route of transportation is _____ (CO2, K2)
- (a) Positive and greater than zero
 - (b) Positive with at least one equal to zero
 - (c) Negative with at least one equal to zero
 - (d) None of the above
4. The purpose of a dummy row or column in an assignment problem is to _____. (CO2, K2)
- (a) obtain balance between total activities and total resources
 - (b) prevent a solution from becoming degenerate
 - (c) provide a means of representing a dummy problem
 - (d) none of the above
5. The graphical method of LPP problem uses _____. (CO3, K4)
- (a) objective function equation
 - (b) constraint equations
 - (c) linear equations
 - (d) all of the above
6. If a non-redundant constraint is removed from an LPP problem, then _____. (CO3, K4)
- (a) feasible region will become larger
 - (b) feasible region will become smaller
 - (c) solution will become infeasible
 - (d) none of the above

7. The activity that can be delayed without affecting the execution of the immediate succeeding activity is determined by _____ . (CO4, K1)
- (a) total float (b) free float
(c) independent float (d) none of the above
8. The slack for an activity is equal to (CO4, K1)
- (a) $LF - LS$ (b) $EF - ES$
(c) $LS - ES$ (d) None of the above
9. Which arrival process is controlled by both service and facility and the customers? (CO5, K3)
- (a) dynamic (b) real
(c) both (a) & (b) (d) all of the above
10. Which of the following characteristics apply to queuing system? (CO5, K3)
- (a) customer population
(b) arrival process
(c) both (a) and (b)
(d) neither (a) nor (b)

Part B

(5 × 5 = 25)

Answer **all** questions not more than 500 words each.

11. (a) Write a note on standard form of LPP problem. (CO1, K3)

Or

- (b) Write an algorithm of Two-Phase method. (CO1, K3)

12. (a) Explain the classical transportation problem and write down its mathematical formulation and show that it is a particular case of linear programming problem. (CO2, K2)

Or

- (b) What is assignment problem? Give two areas of its application. (CO2, K2)
13. (a) Explain the procedure for Graphical Solution to LPP. (CO3, K4)

Or

- (b) The ABC Company has been a producer of picture tubes for television sets and certain printed circuits for radios. The company has just expanded into full scale production and marketing of AM and AM-FM radios. It has built a new plant that can operate 48 hours per week. Production of an AM radio in the new plant will require 2 hours and production of an AM-FM radio will require 3 hours. Each AM radio will contribute Rs 40 to profits while an AM-FM radio will contribute Rs 80 to profits. The marketing department, after extensive research has determined that a maximum of 15 AM radios and 10 AM-FM radios can be sold each week.

Formulate a linear programming model to determine the optimum production mix of AM and FM radios that will maximize profits. (CO3, K4)

14. (a) Differentiate Forward Pass and Backward Pass Computation. (CO4, K3)

Or

- (b) Consider the following project. Draw an arrow diagram to represent the project. (CO4, K3)

Activity : A B C D F G H I

Precedence : - - A A B, C F B, C, D H, G

15. (a) Explain the Johnson's Procedure for determining the optimal sequence. (CO5, K5)

Or

- (b) A book binder has one printing press, one binding machine and manuscripts of 7 different books. The times required for performing printing and binding operations for different books are shown below :

Book : 1 2 3 4 5 6 7

Printing 20 90 80 20 120 15 65

time (hrs.) :

Binding 25 60 75 30 90 35 50

time (hrs.) :

Decide the optimum sequence of processing of books in order to minimize the total time required to bring out all the books. (CO5, K5)

Part – C

(5 × 8 = 40)

Answer **all** questions not more than 1000 words each.

16. (a) What are the rules involved in solving problems using simplex method? Explain. (CO1, K3)

Or

- (b) A manufacturer uses three raw products a,b,c priced at 30, 50 and 120 rupees per kg respectively. He can make three different products A, B and C which can be sold at 90, 100 and 120 rupee per kg respectively. The raw products can be obtained only in limited quantities, namely 20, 15 and 10 kg per day. Given 2 kg of a plus 1 kg of b plus 1 kg c will yield 4 kg of A, 3kg of a plus 2 kg of b plus 2 kg of c will yield 7 kg of B, 2 kg of b plus 1 kg of c will yield 3 kg of C. Make a production plan, assuming the order and cost are not influenced by the choice among the alternatives. Solve the problem by simplex method. (CO1, K3)

17. (a) Solve the following assignment problem to minimize the total cost represented as elements in the matrix (cost in thousand rupees). (CO2, K2)

	Contractor			
Building	1	2	3	4
A	48	48	50	44
B	56	60	60	68
C	96	94	90	85
D	42	44	54	46

Or

- (b) Solve the following transportation problem for minimization (Unit costs are given in rupees).
(CO2, K2)

	Destination					
Origin	D1	D2	D3	D4	D5	Supply
O1	4	3	1	2	6	40
O2	5	2	3	4	5	30
O3	3	5	6	3	2	20
O4	2	4	4	5	3	10
Demand	30	30	15	20	5	

18. (a) Write the steps involved in solving Linear Programming Problem. (CO2, K3)

Or

- (b) Solve Graphically, (CO3, K3)
Minimize $Z = 5x_1 + 4x_2$

Subject to :

$$4x_1 + x_2 \geq 40$$

$$2x_1 + 3x_2 \geq 90$$

$$x_1 \geq 0, x_2 \geq 0.$$

19. (a) An architect has been awarded a contract to prepare plans for an urban renewal project. The job consists of the following activities and their estimated times:
(CO4, K3)

Activity	Description	Immediate Predecessors	Time (days)
A	Prepare preliminary sketches	–	2
B	Outline specifications	–	1
C	Prepare drawings	A	3
D	Write specifications	A, B	2

Activity	Description	Immediate Predecessors	Time (days)
E	Run off prints	C, D	1
F	Have specification	B, D	3
G	Assemble bid packages	E, F	1

- (i) Draw the network diagram of activities for the project.
- (ii) Indicate the critical path, and calculate the total float and free float for each activity.

Or

- (b) The following table gives the activities in a construction project.

Activity	Normal Time (days)	Crash Time (days)	Normal Cost (Rs.)	Crash Cost (Rs.)
1-2	20	17	600	720
1-3	25	25	200	200
2-3	10	8	300	440
2-4	12	6	400	700
3-4	5	2	300	420
4-5	10	5	300	600
4-6	5	3	600	900
5-7	10	5	500	800
6-7	8	3	400	700

- (i) Draw the activity network of the project.

- (ii) Find the total float and free float for each activity.

Using the above information crash the activity step by step until all the paths are critical.

(CO4, K3)

20. (a) A manufacturing company processes 6 different jobs on two machines A and B. Number of units of each job and its processing times on A and B are given in the following table. Find the optimum sequence, the total minimum elapsed time and idle time for each machine. (CO5, K5)

Job Number	No. of units of each job	Processing Time (hours)	
		Machine A	Machine B

Job Number	No. of units of each job	Processing Time (hours)	
		Machine A	Machine B
1	3	5	8
2	4	16	7
3	2	6	11
4	5	3	5
5	2	9	7.5
6	3	6	14

Or

- (b) There are seven jobs, each of which has to go through the machines A and B in the order AB. Processing times in hours are as follows : (CO5, K5)

Job : 1 2 3 4 5 6 7

Machine A : 3 12 15 6 10 11 9

Machine B : 8 10 10 6 12 1 3

Determine a sequence of these jobs that will minimize the total elapsed time T. Also find T and idle time for machine A and B.
