



বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2022

(Under CBCS Pattern)

Semester - IV

Subject: ELECTRONICS

Paper : SEC 2-T

Full Marks : 40

Time : 2 Hours

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

(Internet and JAVA Programming)

1. Answer any **four** questions from the following : 5×4=20
- (i) What are the major responsibilities of JVM? Why Java is called platform independent? 3+2
- (ii) What is the use of the keyword “Super”? What is the difference between instance variable and static variable? 2+3
- (iii) What is an exception? Explain “Array Index Out of Bounds Exception” and “Null Pointer Exception” with example. 1+2+2
- (iv) What are the major differences between an interface and a class? What is constructor? 3+2

P.T.O.

(v) Write a Java program to check whether a string is palindrome or not. 5

(vi) What is the difference between method overloading and method overriding? What is 'final' variable? 3+2

2. Answer any **two** questions from the following : 10×2=20

(i) What do you mean by 'Autoboxing' and 'Unboxing'? Explain with examples. What are the major advantages of inheritance? 1½+1½+5+2

(ii) What is interface? Write a Java program to implement multiple inheritance. 2+8

(iii) What is multithreading? What are the advantages of multithreading? Explain the life cycle of a thread. 2+3+5

(iv) What are the major advantages of package in Java? Write a simple program to implement Java package. What is data abstraction? 2+6+2

Or

(Programming with MATLAB)

1. Answer any **four** questions from the following : 5×4=20

(i) How to create a 6×5 matrix using the ones and zeros command in Matlab in which the first two columns are 0's and the next four columns are 1's? 5

(ii) Find the root of an algebraic equation $y=x^2+3x-18$ using matlab function 'roots'. 5

(iii) Explain if-else-end loop in matlab with an example. 5

(iv) With examples explain uses of round, floor and ceil matlab commands. 5

(v) Write a Matlab program to evaluate the following equation : 5

$$1/1!+2/2!+3/3!+.....+n/n!$$

(vi) Write a program to draw a circle of radiu R=3cm. 5

2. Answer any **two** questions from the following : 10×2=20

(i) Write a program to arrange an array of 10 numbers in ascending and descending order. 5+5

P.T.O.

- (ii) Explain the built-in Matlab functions 'ode45' and 'ode23'. How do they differ from each other? (4+4)+2
- (iii) Write a program to find $y(t) = e^t + 2t$ where $0 \leq t \leq 10$. Plot the above function using the stem function for discrete plot. 5+5
- (iv) Explain the following Matlab commands :
- (a) help
 - (b) clc
 - (c) fprintf
 - (d) \n
 - (e) \t
- 2+2+2+2+2

Or

(Networking and Mobile Communications)

1. Answer any **four** questions from the following : 5×4=20
- (i) What is the concept of frequency reuse in case of wireless technology? 5
 - (ii) Write a short note on network registration. 5
 - (iii) Discuss the different types of transmission media used in data communication. 5
 - (iv) Explain LAN technology. 5
 - (v) Give the concept of error message handling and summary in GSM technology. 5
 - (vi) What are the different types of Bluetooth network? Discuss RS-232C Serial Communication in Bluetooth technology. 2+3
2. Answer any **two** questions from the following : 10×2=20
- (i) What are the different layers used in TCP/IP networking? Briefly discuss each of the layers. Differentiate between OSI model and TCP/IP model. 2+6+2
 - (ii) Discuss GSM system with proper block diagram. 10

P.T.O.

- (iii) Explain TDMA and FDMA. 5+5
- (iv) Give the basic concept of Bluetooth technology. Explain Bluetooth protocol. 6+4

Or

(Circuit Modelling Using P-SPICE)

1. Answer any **four** questions from the following : 5×4=20
- (i) Write short note on P-SPICE software. 5
- (ii) Write a program for transient response of an RL parallel circuit with sinusoidal input voltage with a proper circuit diagram. Give output waveform. 4+1
- (iii) Write different commands used in P-SPICE. 5
- (iv) Discuss briefly how you can model a P-MOSFET using P-SPICE? (DC analysis only). 5
- (v) Discuss briefly how you can model inverting OP-AMP using P-SPICE? (DC analysis only). 5
- (vi) Discuss briefly how you can model half wave rectifier circuit using P-SPICE. 5
2. Answer any **two** questions from the following : 10×2=20
- (i) Discuss briefly how you can model small signal analysis of a MOSFET using P-SPICE. 10
- (ii) Discuss briefly how you can model source follower amplifier circuit using P-SPICE. 10
- (iii) Discuss briefly how you can model full wave rectifier circuit using P-SPICE. 10
- (iv) Discuss briefly how you can model small signal analysis of a BST using P-SPICE. 10
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