

# CBCS Scheme

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15ES51

Fifth Semester B.E. Degree Examination, June/July 2018

## Management and Entrepreneurship Development

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing one full question from each module.*

### Module-1

- 1 a. Explain the scope of management study mentioning few functional area of management. (06 Marks)  
b. Explain different types of managerial skills. (05 Marks)  
c. Compare 'management' with 'administration'. (05 Marks)

OR

- 2 a. Mentioning the importance of planning, explain the steps involved in the planning process. (06 Marks)  
b. Explain a typical decision making process in a medium scale organization. (05 Marks)  
c. Distinguish between standing plans and single use plans in an organization. (05 Marks)

### Module-2

- 3 a. Explain :  
i) purpose of organization  
ii) process of organizing. (06 Marks)  
b. Describe the process of staffing adding note on the benefits of good staffing. (05 Marks)  
c. Explain staff recruitment and selection process with reference to a large scale organization. (05 Marks)

OR

- 4 a. Explain any two 'MOTIVATION' theories as applicable to an organization. (06 Marks)  
b. What is communication? Discuss the purpose of communication. (05 Marks)  
c. Explain the essentials of an effective control system. (05 Marks)

### Module-3

- 5 a. Explain:  
i) Social audit  
ii) Business ethics. (06 Marks)  
b. Describe the social responsibilities of businessmen towards different groups in a society. (05 Marks)  
c. Explain:  
i) Corporate governance  
ii) Myths of entrepreneurship. (05 Marks)

OR

- 6 a. Discuss how entrepreneurs are classified. (06 Marks)  
b. What are the problems faced by entrepreneurs? How to overcome them? (05 Marks)  
c. Explain what is mean by capacity building for entrepreneurship and entrepreneurial development cycle. (05 Marks)

**Module-4**

- 7 a. Define small scale industry, ancillary industry and tiny industry. Trace the growth and performance of small scale industries in India during the last few decades. (06 Marks)
- b. Explain:
- i) WTO versus small scale industries India
  - ii) Overcoming sickness in small scale industrial setup. (06 Marks)
- c. Explain how small scale industries can contribute to economic developments. (04 Marks)

**OR**

- 8 a. Explain policies and schemes of any two central level institutions formed for the support of small and medium sized business enterprises. (08 Marks)
- b. Explain policies and schemes of any two state level institutions formed to support the activities of small scale industrial sector. (08 Marks)

**Module-5**

- 9 a. Explain a New Product Planning and Development process. (06 Marks)
- b. Describe:
- i) Project cycle
  - ii) Project feasibility analysis (06 Marks)
- c. Write notes on project identification. (04 Marks)

**OR**

- 10 a. Explain the importance of network analysis. (05 Marks)
- b. Discuss the different steps involved in PERT analysis. (05 Marks)
- c. Compare PERT with CPM, list the advantages of each. (06 Marks)

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# CBCS SCHEME

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15EC54

## Fifth Semester B.E. Degree Examination, June/July 2018 Information Theory and Coding

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing one full question from each module.*

### Module-1

- 1 a. With neat sketch, explain the block diagram of an information system. (04 Marks)
- b. Define entropy. State various properties of the entropy. (04 Marks)
- c. A code is composed of dots and dashes. Assuming a dash is 3 times as long as a dot and has one-third the probability of occurrence. Calculate:
  - i) The information in a dot and a dash.
  - ii) The entropy of dot-dash code.
  - iii) The average rate of information if a dot lasts for 10mili seconds and the same time is allowed between symbols. (08 Marks)

OR

- 2 a. Derive an expression for the entropy of  $n^{\text{th}}$  extension of a zero memory source. (06 Marks)
- b. The first order Markoff model shown in Fig.Q.2(b). Find the state probabilities, entropy of each state and entropy of the source. (10 Marks)

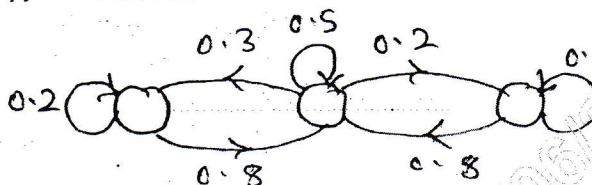


Fig.Q.2(b)

### Module-2

- 3 a. Apply Shannon's binary encoding algorithm to the following set of symbols given in table below. Also obtain code efficiency. (08 Marks)

Symbols	A	B	C	D	E
P	1/8	1/16	3/16	1/4	3/8

- b. Consider a source  $S = \{s_1, s_2\}$  with probabilities  $3/4$  and  $1/4$  respectively. Obtain Shannon-Fano code for source  $S$  and its  $2^{\text{nd}}$  extension. Calculate efficiencies for each case. Comment on the result. (08 Marks)

OR

- 4 a. Consider a source with 8 alphabets A to H with respective probabilities of 0.22, 0.20, 0.18, 0.15, 0.10, 0.08, 0.05 and 0.02. Construct Huffman's code and determine its efficiency. (10 Marks)
- b. With an illustrative example, explain arithmetic coding technique. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.

**Module-3**

- 5 a. Define: i) Input entropy ii) Output entropy iii) Equivocation iv) Joint entropy and v) Mutual information with the aid of respective equations. (04 Marks)
- b. In a communication system, a transmitter has 3 input symbols  $A = \{a_1, a_2, a_3\}$  and receiver also has 3 output symbols  $B = \{b_1, b_2, b_3\}$ . The matrix given below shows JPM. (08 Marks)

$a_i \backslash b_j$	$b_1$	$b_2$	$b_3$
$a_1$	$\frac{1}{12}$	*	$\frac{5}{36}$
$a_2$	$\frac{5}{36}$	$\frac{1}{9}$	$\frac{5}{36}$
$a_3$	*	$\frac{1}{6}$	*
$P(b_j)$	$\frac{1}{3}$	$\frac{14}{36}$	*

- i) Find missing probabilities (\*) in the table.
- ii) Find  $P\left(\frac{b_3}{a_1}\right)$  and  $P\left(\frac{a_1}{b_3}\right)$ .
- c. A transmitter has 5 symbols with probabilities 0.2, 0.3, 0.2, 0.1 and 0.2. Given the channel matrix  $P(B/A)$  as shown below, calculate  $H(B)$  and  $H(A, B)$ . (04 Marks)

$$P(B/A) = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1/4 & 3/4 & 0 & 0 \\ 0 & 1/3 & 2/3 & 0 \\ 0 & 0 & 1/3 & 2/3 \\ 0 & 0 & 1 & 0 \end{bmatrix}$$

Fig.Q.5(c)

**OR**

- 6 a. A Gaussian channel has a 10MHz bandwidth. If (S/N) ratio is 100, calculate the channel capacity and the maximum information rate. (04 Marks)
- b. A binary symmetric channel has channel matrix  $P(Y/X) = \begin{bmatrix} 3/4 & 1/4 \\ 1/4 & 3/4 \end{bmatrix}$  with source probabilities of  $P(X_1) = \frac{2}{3}$  and  $P(X_2) = \frac{1}{3}$ .
- i) Determine  $H(X)$ ,  $H(Y)$ ,  $H(Y/X)$  and  $H(X, Y)$ .
- ii) Find the channel capacity. (06 Marks)
- c. Find the channel capacity of the channel shown in Fig.Q.6(c) using Muroga's method. (06 Marks)

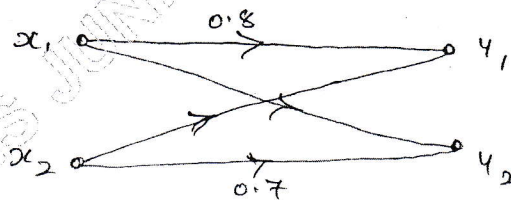


Fig.Q.6(c)

**Module-4**

- 7 a. Distinguish between “block codes” and “convolution codes”. (02 Marks)
- b. For a systematic (6, 3) linear block code, the parity matrix is  $P = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \end{bmatrix}$ . Find all possible code vectors. (08 Marks)
- c. The parity check bits of a (8, 4) block code are generated by  $c_5 = d_1 + d_2 + d_4$ ,  $c_6 = d_1 + d_2 + d_3$ ,  $c_7 = d_1 + d_3 + d_4$  and  $c_8 = d_2 + d_3 + d_4$  where  $d_1, d_2, d_3$  and  $d_4$  are message bits. Find the generator matrix and parity check matrix for this code. (06 Marks)

**OR**

- 8 a. A (7, 4) cyclic code has the generator polynomial  $g(x) = 1 + x + x^3$ . Find the code vectors both in systematic and nonsystematic form for the message bits (1001) and (1101). (12 Marks)
- b. Consider a (15, 11) cyclic code generated by  $g(x) = 1 + x + x^4$ . Device a feed back shift register encoder circuit. (04 Marks)

**Module-5**

- 9 a. Write a note on BCH codes. (06 Marks)
- b. Consider the (3, 1, 2) convolutional encoder with  $g^{(1)} = (110)$ ,  $g^{(2)} = (101)$  and  $g^{(3)} = (111)$ .  
 i) Draw the encoder diagram.  
 ii) Find the generator matrix.  
 iii) Find the code word for the message sequence (11101). (10 Marks)

**OR**

- 10 a. For a (2, 1, 3) convolutional encoder with  $g^{(1)} = (1101)$ ,  $g^{(2)} = (1011)$ , draw the encoder diagram and code tree. Find the encoded output for the message (11101) by traversing the code tree. (10 Marks)
- b. Describe the Viterbi decoding algorithm. (06 Marks)

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15EC553

## Fifth Semester B.E. Degree Examination, June/July 2018 Operating System

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Give the facets of user convenience in an operating system. (08 Marks)  
b. What are the common tasks performed by operating system? Explain. (08 Marks)

OR

- 2 a. Explain briefly the different classes of operating system with primary concern and key concepts. (08 Marks)  
b. With a neat figure explain the turnaround time in batch processing system. (08 Marks)

### Module-2

- 3 a. What are fundamental process states, with a state transition diagram explain the state transitions for a process. (08 Marks)  
b. Explain the different fields of the Process Control Block (PCB). (08 Marks)

OR

- 4 a. What are the advantages of threads over process? Explain kernel level threads. (08 Marks)  
b. For the following set of process perform FCFS and SRN scheduling to calculate mean turnaround time and mean weighted turnaround.

Process	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>
Admission time	0	2	3	4	8
Service time	3	3	5	2	3

(08 Marks)

### Module-3

- 5 a. Give the comparison between contiguous and noncontiguous memory allocation. (08 Marks)  
b. With a neat figure explain the working of address translation in noncontiguous memory allocation. (08 Marks)

OR

- 6 a. Give the comparison between paging and segmentation. List the functions of paging hardware. (08 Marks)  
b. Consider the string 0, 1, 2, 3, 0, 1, 2, 3, 0, 1, 2, 3, 4, 5, 7. Calculate the page faults. Using FIFO and LRU page replacement policies with a frame size 3. (08 Marks)

**Module-4**

- 7 a. Explain file system and IOCS. (08 Marks)  
 b. With a figure explain the working of linked allocation of disk space. (08 Marks)

**OR**

- 8 a. Give the description of different fields in a typical directory entry. (08 Marks)  
 b. Explain the working of file action at close. (08 Marks)

**Module-5**

- 9 a. Give the two important issues in message passing. Explain direct and indirect naming in message passing. (08 Marks)  
 b. Explain mailboxes. Give the advantages of mailboxes. (08 Marks)

**OR**

- 10 a. Explain the conditions for resource deadlock. (08 Marks)  
 b. Using deadlock detection algorithm for the following example of system check, whether the deadlock exist in the system or not.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
P <sub>1</sub>	2	1	0
P <sub>2</sub>	1	3	1
P <sub>3</sub>	1	1	1
P <sub>4</sub>	1	2	2

Allocated Resources

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
P <sub>1</sub>	2	1	3
P <sub>2</sub>	1	4	0
P <sub>3</sub>	0	0	0
P <sub>4</sub>	1	0	2

Requested Resources

R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
0	0	1

Free  
resource

(08 Marks)

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15EC562

Fifth Semester B.E. Degree Examination, June/July 2018

## Object Oriented Programming using C++

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Explain the structure of C++ program. Write a program to find average of two numbers and display the average value. (08 Marks)
- b. Mention applications of C++ programming language. (04 Marks)
- c. Differentiate between structures and unions. (04 Marks)

OR

- 2 a. Explain the memory management operators with an example. (06 Marks)
- b. What is switch statement? Write a program using switch statement to perform addition, subtraction, multiplication and division of operations. (06 Marks)
- c. Explain the working of "for" and "do-while" loop with syntax. (04 Marks)

### Module-2

- 3 a. Explain the call-by-value argument passing mechanism with an example. (06 Marks)
- b. What is function overloading? Write a program to find the sum of two numbers of type int, float and double. Overloaded function name is "add()" that takes two parameters of types. (06 Marks)
- c. Write a program to find square of a number using inline function. (04 Marks)

OR

- 4 a. Why friend function is needed? Write a program to find mean value of two numbers using friend function. (06 Marks)
- b. Define class. Write the syntax for class declaration and member function declared outside the class. (04 Marks)
- c. Write a program to create class called book, containing two data items "title" and "price" and member functions are getdata and printdata respectively. Using this class, display the title of book and price and also write main program to declare object "b" and use member function of the class. (06 Marks)

### Module-3

- 5 a. Explain the parameterized constructor with an example. (06 Marks)
- b. Explain the copy constructor with an example. (06 Marks)
- c. List some of the special properties of the constructor function. (04 Marks)



OR

- 6 a. Explain the destructor function with an example. (06 Marks)  
b. Define operator overloading. Write a program to add two complex number by overloading '+' operator. (06 Marks)  
c. Write a program for overloading unary minus. (04 Marks)

**Module-4**

- 7 a. What is inheritance? Explain single inheritance with an example. (08 Marks)  
b. Explain multiple inheritance with an example. (08 Marks)

OR

- 8 a. Explain "this" pointer. Write a program to read two objects and their respective data items containing "name" and "age". Find the greatest age using "this" pointer. (08 Marks)  
b. What is virtual function? Mention the rules of virtual function. Write a program for virtual function. (08 Marks)

**Module-5**

- 9 a. Explain C++ stream classes used for I/O operations. (08 Marks)  
b. Explain the unformatted I/O operations with syntax. (08 Marks)

OR

- 10 a. Explain classes for file stream operations. (08 Marks)  
b. Explain ios format functions with syntax. (08 Marks)

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