University of Sargodha

BS 2nd Semester/Term Examination 2020

Subject: BSSE/IT Paper: Object Oriented Programming (CMPC-102)

Time Allowed: 2:30 Hours **Maximum Marks: 60**

Note: Objective part is compulsory. Attempt any three questions from subjective part.

Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (2*12)

i. Write purpose of copy constructor?
ii. How do you differentiate a class from an object?
iii. What is Polymorphism?
iv. Give example of exception handling.
v. Give example of any overloaded operator of string class.
vi. Can sorting help in searching array's elements?
vii. What happens in case a user does not provide a constructor?
viii. Discuss the relative merits of using protected access vs. using private access in base classes.
ix. What is the purpose of information hiding?
x. What do you mean by default member-wise assignment?
xi. Differentiate between sequence container and associative container.
xii. When do we need to allocate memory dynamically?

Subjective Part (3*12)

Q.2. a) Compare in detail the following access modifiers. (6)
i. Public
ii. Private
iii. Protected

b) Write a simple program that overloads the Unary prefix and postfix ++ and -- operators. (6)

Q.3. a) Write detailed note on Inheritance. Also clearly mention the relationship between base class and derived class. (8)

b) Differentiate between virtual functions and pure virtual functions. (4)

Q. 4. Create a *Distance* class with instance variable *feet* and *inches*. Write suitable parameterized constructor, getter and setter functions. Also write another function to subtract two objects of class distance in such a way that if resultant inches are less than 1, feet should be decremented by 1 and inches incremented by 12 by using the statement *dist3.sub(dist1, dist2)*; where dist1, dist2 and dist3 are objects of class *Distance* and *sub* is a user-defined function. (12)

Q.5. a) Give example of overloading a binary operator. (4)

b) Create an Address class that used House#, Street#, and name of a City as data members of the Address class. Create another class Person that defines Name as its data member and uses the above Address class's data members as its data members. Use constructors (both with and without parameters) to initialize the data members of Person class and display functions to display the objects of the Person class. (8)

Q.6. Define a class for a bank account that includes the following data members. (12)
Name of depositor, account number, type of account, balance amount in the account.
The class also contains the following member functions:
i. A constructor to assign initial value.
ii. A constructor to assign values from the user.
iii. Deposit function to deposit some amount. It should display error message if deposited amount is less than or equal to 0, and not add that amount in balance amount.
iv. Withdraw function to withdraw amount from an account. It should display an error message if withdrawn amount is greater that balance amount in the account or if withdrawn amount is negative.

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BS 2nd Semester/Term Examination 2020

Subject: I.T **Paper: Digital Logic Design (ITCS-102)**

Time Allowed: 2:30 Hours **(New Course)** **Maximum Marks: 80**

Note: Objective part is compulsory. Attempt any three questions from subjective part.

Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (2*16)

i. Express + 19 and - 19 in sign-magnitude, I's complement, and 2's complement.

ii. Add the signed numbers: a 1000100, 00011011, 00001110, and 00010010.

iii. Perform each of the following subtractions of the signed numbers
a) 00001000 - 00000011 b) 00001100 - 11110111

iv. Convert the following binary numbers to hexadecimal
a) 100101001010111 b) 1111100001101001

v. How does an exclusive-OR gate differ from an OR gate in its logical operation?

vi. Apply De Morgan's theorems to each of the following expressions
$\overline{(A + B + C)D}$ (b) $\overline{AB + CD + EF}$

vii. Simplify the following Boolean expression: $[A\overline{B}(C + BD) + \overline{AB}]C$

viii. Convert the following Boolean expression into standard SOP form $A\overline{B}C + \overline{A}\,\overline{B} + AB\overline{C}D$

ix. Develop a truth table for the standard SOP expression $\overline{A}\,\overline{B}C + A\overline{BC} + ABC$

x. Map the following standard SOP expression on a Karnaugh map: $\overline{A}\,\overline{B}C + \overline{A}B\overline{C} + AB\overline{C} + ABC$

xi. Group the 1s in the following Karnaugh maps.

AB \ CD	00	01	11	10
00	1			1
01	1	1		1
11	1	1		1
10	1		1	1

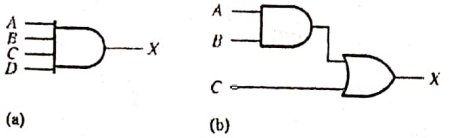
xii. Define Don't Care Conditions

xiii. Identify the law of Boolean algebra upon which each of the following equalities is based

(a) $A\overline{B} + CD + A\overline{C}D + B = B + A\overline{B} + A\overline{C}D + CD$

(b) $AB\overline{C}D + \overline{A}B\overline{C} = D\overline{C}BA + \overline{C}B\overline{A}$

xiv. Write the Boolean expression for each of the logic circuits.



(a) (b)

xv. Design a logic circuit to implement the operation specified in the following truth table.

INPUT			OUTPUT	PRODUCT TERM
A	B	C	Y	
0	0	0	0	
0	0	1	0	
0	1	0	0	
0	1	1	1	$\bar{A}BC$
1	0	0	0	
1	0	1	1	$A\bar{B}C$
1	1	0	1	$AB\bar{C}$
1	1	1	0	

xvi. What is the functionality of the following Logic Diagram?

Subjective part (3*16)

Q.2. Draw Full Adder Logic diagram and its truth table.

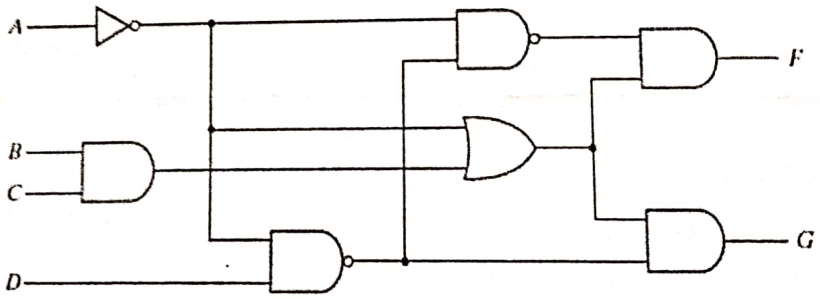
Q.3. Draw seven segment logic diagram and its truth table

Q.4. What is decoder? Draw truth table for four bit decoder

Q.5. Simplify the following Boolean functions, using *Karnaugh* maps

(a) $F(x, y, z) = \sum (2, 3, 6, 7)$ (b) $F(A, B, C, D) = \sum (4, 6, 7, 15)$

Q.6. Obtain the simplified Boolean expressions for output F and G in terms of the input variables in the circuit given below.



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BS 2nd Semester/Term Examination 2020

Subject: IT/CS/SE **Paper: Communication & presentation skills (ENGL-102)**

Time Allowed: 2:30 Hours **Maximum Marks: 80**

Note: Objective part is compulsory. Attempt any three questions from subjective part.

Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (2*16)

i. Name the participants of communication process?
ii. What is the difference between hearing and listening?
iii. What is paralanguage?
iv. What is the importance of AV aids in presentation?
v. What are internal barriers to communication?
vi. Define decoding?
vii. How one can overcome prejudice?
viii. What is the role of channel in the process of communication?
ix. Define active listening?
x. Define audience analysis?
xi. What are the different parts of presentation?
xii. What is you-attitude?
xiii. What is the spirited style of communication?
xiv. What are the factors that block listening?
xv. How do you define non-verbal communication?
xvi. State any two important things required for an interview?

Subjective Part (3*16)

Q.2. Communication is simply the act of transferring information from one place, person or group to another. Every communication involves (at least) one sender, a message and a recipient. Comment.

Q.3. What type of factors aid a person in becoming Active Listener?

Q.4. Nonverbal communication is the transfer of information through the use of body language including eye contact, facial expressions, gestures and more. Elaborate with the help of examples.

Q.5. What are the different steps involved in preparation of an interview?

Q.6. What is Audience analysis? How does it helps in preparing for oral presentation?

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BS 2nd Semester/Term Examination 2020

Subject: URCE-5102 **Paper: Language Comprehension & Presentation Skills**

Time Allowed: 2:30 Hours **Maximum Ma**

Note: Objective part is compulsory. Attempt any three questions from subjective part.

Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (2*1

i. Define phoneme by giving examples.
ii. What is "contextualized vocabulary"?
iii. How can a presenter conclude his presentation effectively?
iv. What is the difference between comparison and contrast?
v. What does it mean to infer?
vi. Explain intonation.
vii. Define listening.
viii. What is implied idea of a text?
ix. Briefly explain stress pattern.
x. How you can give suggestions while ending a presentation?
xi. What are differences between pure vowel and diphthong?
xii. What do you mean by Skimming?
xiii. Give three main features of a presentation?
xiv. What are isolated sentences?
xv. Why is comparing and contrasting important in the phenomenon of reading?
xvi. Explain SQ3R method.

Subjective Part (3*16)

Q.2. What are types of presentation? Explain them briefly.
Q.3. How a student can improve his speaking skills? Give some techniques and strategies.
Q.4. What are listening barriers? Discuss their remedies.
Q.5. What is panel discussion and how you can resolve conflicts through panel discussion?
Q.6. What are the features of good presentation? Explain them.

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BS 2nd Semester/Term Examination 2020

Subject: Information Technology **Paper: Probability & Statistics (MATH-102)**

Time Allowed: 2:30 Hours **Maximum Marks: 80**

Note: Objective part is compulsory. Attempt any three questions from subjective part.

Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (2*16)

i. Define the term Statistics.
ii. Distinguish between primary and secondary data.
iii. Define standard deviation and how it is calculated.
iv. Write down any four properties of variance.
v. Write only the names of different relative measure of dispersion.
vi. What are the shortcomings of the classical definition of probability?
vii. State only the law of addition for mutually exclusive events.
viii. Under what condition two events are said to be independent.
ix. Define expectation and write any two properties of expectation.
x. Define binomial experiment with properties.
xi. Differentiate between simple regression and multiple regression.
xii. In what situation binomial distribution converges to normal distribution.
xiii. Discuss the sampling distribution of means.
xiv. Differentiate between Point and interval estimates.
xv. Distinguish between simple and composite hypothesis.
xvi. Define type-I and type-II error.

Subjective Part (3*16)

Q.2. Find Arithmetic Mean and Mode for the following data. (8+8)

Weights(gms)	50-54	55-59	60-64	65-69	70-74	75-79
No. of students	4	15	17	8	5	1

Q.3. a) Three ball are drawn from a bag congaing 5 white and 3 black balls. If X denotes the number of black balls drawn from bag, then find the probability distribution of X. (8+8)

b) A random variable X has $E(X^2) = 25$, Var (X) = 9, then calculate $E(X^2+5X+3)$

Q.4. The joint p.d. of two discrete random variables X and Y is given by (16)

$$f(x,y) = \frac{xy^2}{30} \quad for\ x = 1,2,3\ and\ y = 1,2$$

Are X and Y independent?

Q.5. Compute the least square regression line of Y on X for the following data and also (8+8)

X	5	6	8	10	12	13	15
Y	16	2p	23	28	36	41	44

i) Find the values of $\hat{Y}$ and show that $\sum(Y - \hat{Y}) = 0$

ii) Compute the standard error of estimate i.e. $S_{y.x}$

Q.6. a) A random sample of size n_1=100 yielded the $\bar{X}_1 = 509\ and\ S_1^2 = 950$. A random sample of size n_2=100 from another population yielded $\bar{X}_2 = 447\ and\ S_2^2 = 876$. Find 95% confidence Interval for: $\mu_1 - \mu_2$. (8+8)

b) The weight of 1500 ball bearings are normally distributed with mean 22.40 and standard deviation 0.048. If 300 random samples of size 36 are drawn from this population, then determine mean and variance of sampling distribution of means if sampling is done without replacement.

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BS 2nd Term/Semester Exam 2020

Subject: I. T **Course: Business Economics (BUSB-102)**

Time Allowed: 2:30 Hours **Maximum Marks: 80**

Note: Objective part is compulsory. Attempt any three questions from subjective part.

Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each (2*16)

i. Business Ethics
ii. Business Economics
iii. SME
iv. Law of Demand vs Law of Supply
v. Sunk Cost
vi. Subsidy
vii. Production
viii. Monopoly
ix. Social Cost
x. Industry
xi. Cross elasticity of demand
xii. Market
xiii. Externalities
xiv. GDP vs GNP
xv. Demand Forecasting
xvi. Household Consumption

Subjective Part (3*16)

Q.2. Define Monopoly? What are the few disadvantages of it? Explain how price is determined in such markets?

Q.3. State and Explain Law of supply?

Q.4. What are different types of firms? Why Multinational Corporations are important for economic growth? Explain their role in brief?

Q.5. What is the difference between domestic and international trade? How do you see the future of Pakistan under Pak China Economic Corridor in international trade?

Q.6. Define Inflation? How inflation effects the buying power of consumers? What measures can Government of Pakistan can take to control the rising inflation in the country?
