

**The State of Israel
Ministry of Education**

Exam Type:

Bagrut for high schools

Exam Date: Summer 2016

Exam Number: 899282

English Translation (3)

מדינת ישראל

משרד החינוך

סוג הבחינה:

בגרות לבתי ספר על-יסודיים

מועד הבחינה: קיץ תשע"ו, 2016

מספר השאלון: 899282

תרגום לאנגלית (3)

**Computer Science
for the Reform for Meaningful Learning
Program**

מדעי המחשב
על פי תכנית הרפורמה ללמידה משמעותית

הוראות לבחן

א. משך הבחינה: שעותיים.

ב. מבנה השאלון ומפתח ההערכה:

בשאלון זה שלושה פרקים.

פרק ראשון – יש לענות על שלוש השאלות 1-3

30 נקודות – (10×3)

פרק שני – $(10 \times 1) + (20 \times 2)$ – 50 נקודות

פרק שלישי – יש לענות על אחת מן

השאלות 8-9

20 נקודות – (20×1)

סה"כ – 100 נקודות

ג. חומר עזר מותר בשימוש:

כל חומר עזר (חוץ ממחשב הניתן לתכנות).

Instructions for examinees

א. Duration of the exam: Two hours

ב. Exam structure and breakdown of points:

This exam has three parts.

Part One - Answer all three questions 1-3

30 points – (3×10)

Part Two - $(1 \times 10) + (2 \times 20)$ – 50 points

Part Three - Answer one of the questions 8-9

20 points – (1×20)

Total – 100 points

ג. Material that may be used during the exam:

All material, except for a programmable
computer.

כתוב במחברת הבחינה בלבד, בעמודים נפרדים, כל מה שברצונך לכתוב כטיוטה (ראשי פרקים, חישובים וכדומה). רשום "טיוטה" בראש כל עמוד טיוטה. רישום טיוטות כלשהן על דפים שמחוץ למחברת הבחינה עלול לגרום לפסילת הבחינה!

Write only in the answer booklet. Use separate pages for everything you want to use as draft material (outlines, calculations, etc.). Write "טיוטה" at the top of each draft page. Writing draft material on pages outside the answer booklet may lead to the disqualification of your exam!

Good Luck!

בהצלחה!

Questions

Part One (30 points)

Answer all three questions 1-3 (each question – 10 points).

1. A program segment written in Pascal is shown below.

Using a trace table [טבלת מעקב], follow the execution of the program segment and write what will be printed.

For the input, choose a number between 10 and 20.

```
C := 30;  
READLN (A);  
B := A – C;  
WRITELN (A , B , C);  
B := ABS (B);  
WRITELN (A , B , C);
```

2. A program segment written in Pascal is shown below.

Using a trace table, follow the execution of the program segment and write what will be printed.

For the input, use a number of your choosing.

```
X := 2;  
READLN (Y);  
X := X + Y;  
A := ' MARK '  
B := 'GO';  
WRITELN (A , B , '=' , X);
```

3. Using Pascal, write a program segment that will accept an integer as input.

The program segment will print that integer and the value of that integer multiplied by 2 [מכפלתו ב-2].

Part Two (50 points)

Answer three questions:

Question **4** (required question – 10 points)

and two of the questions **5-7** (each question – 20 points).

Answer Question **4** – required!

4. A program segment written in Pascal is shown below.

Using a trace table, follow the execution of the program segment for the input: 0, 1, 8, 7 and write what will be printed.

```
SUM := 0;
FOR I := 1 TO 4 DO
BEGIN
    READLN (A);
    SUM := SUM + A;
    IF I > SUM THEN
        WRITELN ( '***' );
END;
WRITELN (SUM);
```

Answer two of the questions 5-7.

- 5.** A toll road (a road that drivers must pay to use) is divided into sections. It costs 30 shekels to travel over each section. A driver who travels over more than 8 sections will receive a 10-shekel discount on his final bill. Using Pascal, write a program that will accept as input the name of a driver and the number of sections of the toll road over which that driver traveled. The program will print the driver's name and the amount he needs to pay.
- 6.** A computer repair company has 286 technicians. Using Pascal, write a program that will accept the following as input for each technician: the technician's name and the number of repairs he did on a given day. If the technician did more than 25 repairs that day, the program will print his name and the message "BONUS". The program will also calculate and print the total number of repairs done by all of the company's technicians on that day.
- 7.** The cost of a meal at a restaurant is 9 shekels. Using Pascal, write a program that will accept the following as input for each of the restaurant's customers on a given day: the customer's name and the number of meals he ordered. The program will calculate the amount that each customer needs to pay for the meals that he ordered and will print the customer's name and the amount he needs to pay. The program will also count and print the number of customers who came to the restaurant that day. The program will end when "SOF" is entered as a customer name.

Part Three (20 points)

Answer one of the questions 8-9.

8. Given: a one-dimensional array A with a size of 80 that contains integers. Using Pascal, write a program that will accept an integer that is greater than 0 and smaller than 80 as input for the variable K and also accept an integer as input for the variable P.

The program will check whether the sum of the first K elements in the array is greater than P.

If it is, the program will print the sum of the first K elements in the array.

Note: You do not need to input the terms of the array.

You do not need to check the validity of the input.

9. Using Pascal, write a program that will accept integers greater than 0 as input for the one-dimensional array B, which has a size of 100.

The program will also accept as input an additional number NUM, which is greater than 0, and will print the number of elements in the array that are greater than NUM.

If there are no elements in the array that are greater than NUM, the program will print "NO NUMBER".

Note: You do not need to check the validity of the input.

Good Luck!

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בהצלחה!

זכות היוצרים שמורה למדינת ישראל.
אין להעתיק או לפרסם אלא ברשות משרד החינוך.