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THE PEOPLE'S
UNIVERSITY

Dear Student,

This assignment booklet consists of certain questions related to the printed study material that has been sent to you. It is necessary to do this assignment as it constitutes the continuous evaluation component of this course.

The main purpose of this assignment is to help you assess your grasp of the learning material. The information given in the printed course material should be sufficient for answering the assignment.

You have to complete the assignment in time. You will not be allowed to appear for the term-end examination if you do not submit the assignment in time. If you appear in the term-end examination without submitting the assignment, then the result of the term-end examination is liable to be cancelled.

Please submit your assignment before 31st December, 2017.

The counsellor attached to your study centre will be evaluating your assignment as well as OMR sheet and will give the comments on them within a month after submission. These comments will give you some feedback regarding your understanding of the subject.

For your own record, **retain a copy** of all the assignment responses which you submit to the Coordinator of your study centre. If you do not get back your evaluated assignments along with the comments on them within a month after submission, please ask your study centre coordinator for them.

In case you are unable to submit the assignment responses then you have to wait for the assignments meant for the next batch of students. **The request for the new assignment may be addressed to the Assistant Registrar, Material Production & Distribution Division, Indira Gandhi National Open University, Maidan Garhi, New Delhi-110068, in the month of January/February in the prescribed form printed in your programme guide.** (Assignments are also available from the IGNOU website www.ignou.ac.in. You can access them by clicking on the links "Student Zone ⟶ Assignments ⟶ BPP".)

Instructions for Formatting Your Assignments

Before attempting the assignment please read the following instructions carefully.

1) On top of the first page of your answer sheet, please write the details exactly in the following format:

ROLL NO. :……

NAME :……

ADDRESS :……

……

……

COURSE CODE: …….

COURSE TITLE : …….

ASSIGNMENT NO. ……..…

STUDY CENTRE : ……..…..

DATE:…….……...

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

3) Leave 4 cm margin on the left, top and bottom of your answer sheet.

4) Your answers should be precise.

5) While solving problems, clearly indicate which part of which question is being solved.

6) **This assignment (along with the filled OMR sheet) is to be submitted to the Study Centre**.

7) This assignment is valid only upto December, 2017.

We strongly suggest that you **retain a copy of your answer sheets**.

We wish you good luck!

Assignment

Course Code: OMT-101
Assignment Code: OMT-101/2017
Maximum Marks: 100

Section – A

1. a) Which feature distinguishes Mathematics from the other sciences? Justify your answer. (2)

b) Which of the following are right? Correct those which are wrong.

i) $\frac{5+3}{6} = \frac{5+3}{6_2} = \frac{6}{2} = 3$

ii) $\frac{7 \times 4}{14} = \frac{7^1 \times 4^2}{14_{2_1}} = 2$

iii) $7\frac{1}{3} \div \frac{3}{5} = \frac{7}{3}$ (4)

c) Write down an equation to help solve each of the following problems. Simplify it wherever possible.

i) The length of a rectangular office room is 1m longer than its width. If its perimeter is 10m, what are its dimensions?
ii) A bag contains 8 currency notes. They are all Rs. 5 or Rs. 10 notes. Their total value is Rs. 65. How many of each type do the bag has?
iii) There are 52 more girls students than boys in a school, making 308 students in all. How many girls are there? (4)

2. a) Compute the following by giving the necessary steps.

i) $27 - [5 + (28 \div 4)]$

ii) $2013.05 + 0.092 + 10.9$

iii) 0.09×1.001 (4)

b) Suppose it takes a worker 30 minutes to make one basket. If a working day is $7\frac{1}{2}$ hours, how many baskets can be made in a day? (2)

c) Prove or disprove the statement that every prime number is an even number. (2)

d) Arrange the following in ascending (increasing) order.

i) -3, 2, 1, -5, 0, 4, -1

ii) $\frac{1}{5}, \frac{3}{4}, \frac{3}{6}, \frac{2}{8}$ (2)

3. a) Write the expansion of $\left(2x + \frac{1}{x}\right)^4, x \neq 0$ and find the coefficient of its middle term. (5)

b) i) In a restaurant, three different soups and 4 different vegetables are available. In how many different ways can you order a soup and a vegetables?

ii) In how many ways can you rearrange the letters of the word 'SATIN'? (5)

4. a) Give one example for each of the following

i) A shape which has only one axis of symmetry.

ii) An object which does not have rotational symmetry.

iii) A shape which can be used for regular tiling. (3)

b) Check whether the points (4, 2), (2, 0), (2, 2) and (4, 0) can be the vertices of a rectangle. (4)

c) A marble tile measures $15\,\text{cm} \times 20\,\text{cm}$. How many tiles will be required to cover a wall of size $4\text{m} \times 6\text{m}$ if you lay the 15cm side along the 6m wall? (3)

5. a) The scores obtained by 30 students in a test are given below:

7, 10, 6, 7, 9, 4, 7, 9, 9, 8, 5, 5, 7, 8, 4, 6, 9, 7, 12, 7, 9, 10, 4, 7, 5, 9, 8, 9, 5, 7.

i) Using the concept of 'less than 0 give', find the percentage of students getting above 8 marks.

ii) Find the median and mode of the data. (4)

b) A box contains 3 white and 2 blue balls. Two balls are drawn at random without replacement. Write the sample space of outcomes. Find the probability that both balls are of the same colour. (4)

c) Which of the following events are mutually exclusive. Justify your answers

i) E: The event of scoring an even number of heads in three successive tosses of a coin.

F: The event that the head appear in the last two tosses of a coin.

ii) E: Getting a spade while picking a card from well-shuffled deck of cards.

F: Getting a clubs while picking a card from well-shuffled deck of cards. (2)

6. a) If an investment is made for Rs. 10,000/- for 2 years, then find

i) The simple interest at an annual 12% rate of interest.

ii) The interest, compounded semi-annually at an annual 10% rate of interest. (5)

b) An amount of Rs. 5000/- is invested in a company's share. If the total dividend declared by the company is Rs. 250/- then find the rate of dividend paid by the company. (3)

c) Suppose you buy a book for Rs. 450 after getting a 10% discount. What would be the amount that is to be paid for the same book if the discount is 15% ? (2)

7. a) A rectangle has sides $(3+\sqrt{2})$ metres and $(5-\sqrt{2})$ metres. Find the area of the rectangle and length of its diagonal. (4)

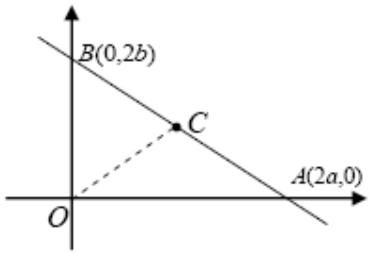
b) The third term of an A.P is 5 and the seventh term is 9. Find its 17^{th} term. (4)

c) Compute the following

$$\frac{C(8,4)}{2!} + P(5, 2) \quad (2)$$

8. a) Find 3 differently shaped cross section of a hyperboloid and roughly sketch them. (3)

b) In Figure AOB is a right angled triangle and C is the middle point of the diagonal AB.



i) Show that the distance of C from O, A, B are equal.

ii) Find the area of the triangle AOC. (4)

c) One boiler is in the shape of a cylinder whose height is 2 metre and the ends (tops) are semi-circled with diameter 1 metre. Find the volume of the water it can hold. (3)

Section – B

The following 20 questions are multiple choice types. Only one of the four alternatives given in each is correct. You have to identify the correct answer. Each question is worth **1 mark**. You have to give their answers in the copy of the **OMR sheet attached with this** and submit it along with your answers to the other questions, for assignment evaluation. Please read the instructions given for filling the OMR sheet, carefully before you start filling your answers. (**Please note that this is to give you a practice in writing the answer on an OMR sheet.**)

1. The sum of all integers from -5 to 5 is

1) 30 2) 1

3) 0 4) 10

2. $5\frac{1}{2}^{o}$ is equal to

1) $270'$ 2) $300'$

3) $330'$ 4) $350'$

3. $\sqrt[3]{4+\sqrt{16}} =$

1) 2 2) 4

3) 6 4) 8

4. The solution of the equation $\frac{x+3}{5} = 2x$ is

1) $x = -3$ 2) $x = -\frac{1}{3}$

3) $x = 6$ 4) $x = \frac{1}{3}$

5. If one-third of one fourth of a number is 15, then three-fourth of that number is

1) 35 2) 36

3) 135 4) 180

6. The angle between the hands of a clock at 8 : 30 pm is

1) right 2) acute

3) reflex 4) obtuse

7. $0.005 \times 0.2 =$

1) 0.0001 2) 0.001

3) 0.01 4) 0.1000

8. The value of the expression $\left(8\frac{2}{3} - 3\frac{1}{5}\right) \times \frac{30}{41}$ is

1) 1 2) 2

3) 3 4) 4

9. The volume of a cuboid with length $\frac{1}{2}a^2b$, breadth $\frac{2}{3}ab$ and height a^2 is

1) $\frac{2}{3}a^5b^2$ 2) $\frac{1}{3}a^4b^2$

3) $\frac{1}{3}a^5b$ 4) $\frac{1}{3}a^5b^2$

10. 5x is equal to

1) $5 + x$ 2) $x + x + x + x + x$

3) 5^x 4) $x \times x \times x \times x \times x$

11. If $57.13 \times 2.1 = 119.973$, then $5.713 \times 0.21 =$

1) 119.973 2) 11.9973

3) 1.19973 4) 0.119973

12. If $21 \times (-36) + A \times 46 = 21(-36 + 46)$, then the value of A is

1) 36 2) 21

3) -21 4) -46

13. How many rotational symmetries does a square have?

1) 1 2) 2

3) 3 4) 4

14. The degree of the polynomial $x^2y^2z^2 + xyz + x^3 + x^4y$ is

1) 6 2) 5

3) 4 4) 3

15. Median of the data 10, 12, 9, 7, 11, 16 is

1) 7.5 2) 10

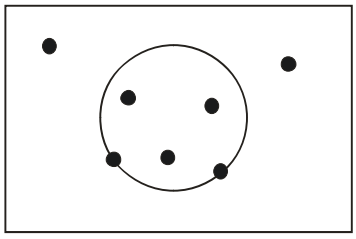
3) 10.5 4) 8

16. The slope of the line $2x + y = 1$ is

1) -2 2) 2

3) $\frac{1}{2}$ 4) $\frac{1}{3}$

17. How many points lie on the circle given in the following figure?



1) : 2) 5

3) 3 4) 2

18. The 6^{th} term of the GP $\sqrt{3}, 3, 3\sqrt{3}....$ is

1) $39 + 13\sqrt{3}$ 2) $13\sqrt{3}$

3) 27 4) 81

19. If $P(A) = \frac{5}{100}$, $P(B) = \frac{10}{100}$ and $P(A \cap B) = \frac{2}{100}$, then $P(A \cup B) =$

1) $\frac{7}{100}$ 2) $\frac{53}{100}$

3) $\frac{20}{100}$ 4) $\frac{13}{100}$

20. Raghu borrowed a sum of ⊂ 10,000 from Renu for 3 years. If Renu charges 8% simple interest per annum, how much will Raghu have to pay after 3 years?

1) ⊂ 10,240 2) ⊂ 10,420

3) ⊂ 12,200 4) ⊂ 12,400

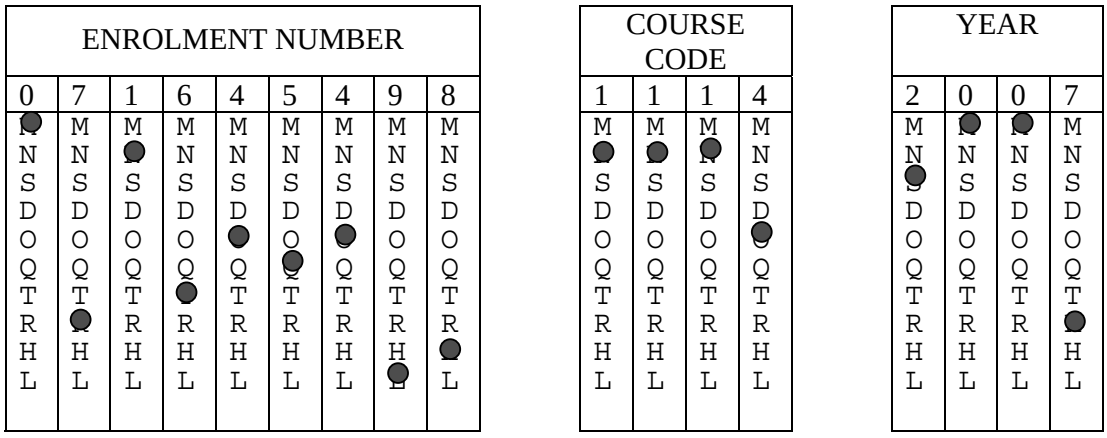
INSTRUCTIONS FOR MARKING
IN THE
OMR RESPONSE SHEET

1. Use only H.B. pencil for filling the response sheet.

2. Mark your answers in the proper column.

3. Enter your Enrolment No., year, month, course code and examination code in the respective boxes given for that as shown below. For example if your enrolment number is 071645498, then you need to first write the enrolment number as shown in the box titled ENROLMENT NUMBER., given below. Then you have to dark each circle corresponding to each digit appearing in the enrolment number. Suppose, for example, the leftmost digit is 0. So we darken the first 0 in the box. Next digit is 7. Then we select the row containing 7 and darken the '7' in the second column. Similarly you can fill the other digits.

   Note that the **Course Code** you have to fill in the OMR sheet is the **computer code** for this course which is **1114.** This is different from the course code given in the programme guide or blocks for this course.



4. For filling the correct choice for the multiple choice questions, do as illustrated in the following example.

Suppose Question 13 is as given below:

Q.No. 13.: Which one of the following is **not** an integer.

(1) -1 (2) 0.5
(3) $\sqrt{4}$ (4) 0

Suppose your answer to the question is "$\sqrt{4}$" which is given in option no. "3". Then you have to select the column against no. 13 in the boxes given below and write 3 in the box below "13" and shade the circle numbered 3 in that as shown below. If your answer is such that none of the 4 options are correct, then select 0.

1	2	3	4	5
M N S D O	M N S D O	M N S D O	M N S D O	M N S D O

6	7	8	9	10
M N S D O	M N S D O	M N S D O	M N S D O	M N S D O

11	12	13	14	15
M N S D O	M N S D O	M N S ● O	M N S D O	M N S D O

16	17	18	19	20
M N S D O	M N S D O	M N S D O	M N S D O	M N S D O

OMR Response Sheet
(For writing answers to multiple choice questions)

This page is to be torn off and after filling the relevant boxesattach it along with your answers to other questions in the assignment. **This is to be submitted at the study centrefor evaluation**.

ENROLMENT NUMBER								
MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL

COURSE CODE			
MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL

YEAR			
MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL

EXAMINATION CENTRE CODE			
MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL	MNSDOQTRHL

MONTH	
MN	MNSDOQTRHL

ANSWERS TO MULTIPLE CHOICE QUESTIONS

1	2	3	4	5
MNSDO	MNSDO	MNSDO	MNSDO	MNSDO

6	7	8	9	10
MNSDO	MNSDO	MNSDO	MNSDO	MNSDO

11	12	13	14	15
MNSDO	MNSDO	MNSDO	MNSDO	MNSDO

16	17	18	19	20
MNSDO	MNSDO	MNSDO	MNSDO	MNSDO