

## PULEET- 2013

**Important:** Please consult your Admit Card/Roll No. slip before filling your Roll Number on the Test Booklet and Answer Sheet.

Roll No.

*In Figure*

*In Words*

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O.M.R. Answer Sheet Serial No.

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Signature of the Candidate \_\_\_\_\_

Time: 90 minutes

Number of Questions: 75

Maximum Marks : 75

**DO NOT OPEN THE SEAL ON THE BOOKLET UNTIL ASKED TO DO SO**

### INSTRUCTIONS

1. Write your roll No. on the Question Booklet and also on the OMR Answer Sheet in the space provided and nowhere else.
2. Enter the Code No. of Question Booklet on the OMR answer Sheet. Darken the corresponding bubbles with **Black Ball Point/Black Gel Pen**.
3. Do not make any identification mark on the Answer Sheet or Question Booklet.
4. To open the Question Booklet remove the seal gently when asked to do so.
5. Please check that this Question Booklet contains 75 questions. In case of any discrepancy, inform the Assistant Superintendent within 10 minutes of the start of test.
6. Each question has four alternative answer (A, B, C, D) of which only one is correct. For each question, darken only one bubble (A or B or C or D), whichever you think is the correct answer, on the Answer Sheet with **Black Ball Point/Black Gel Pen**. There shall be negative marking for wrong answers.
7. If you do not want to answer a question, leave all the bubbles corresponding to that question blank in the Answer Sheet. No marks will be deducted in such cases.
8. Darken the bubbles in the OMR Answer Sheet according to the Serial No. of the questions given in the Question Booklet.
9. If you want to change an already marked answer, erase the shade in the darkened bubble completely.
10. For rough work only the blank sheet at the end of the Question Booklet be used.
11. The Answer Sheet is designed for computer evaluation. Therefore, if you do not follow the instructions given on the Answer Sheet, it may make evaluation by the computer difficult. Any resultant loss to the candidate on the above account, i.e. not following the instructions completely, shall be of the candidate only.
12. After the test, hand over the Question Booklet and the Answer Sheet to the Assistant Superintendent on duty.
13. In no case the Answer Sheet, the Question Booklet, or its part or any material copied/ noted from this Booklet is to be taken out of the examination hall. Any candidate found doing so would be expelled from the examination.
14. A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any paper possibly of any assistance or found giving or receiving assistance or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent/Observer whose decision shall be final.
15. Telecommunication equipment such as pager, cellular phone, wireless, scanner, etc., is not permitted inside the examination hall. Use of calculators is not allowed.

1. What can you say about the consistency of the following system of equations  
 $x-y+z = -1$ ,  $x-y+z = 1$ ,  $x-y-z = -1$  ?

(A) Consistent and has a unique solution (B) No solution  
 (C) Consistent has infinite solutions (D) None of these

2. What is the distance between the lines

$$\frac{x}{5} = \frac{y-2}{2} = \frac{z-3}{3}, \quad \frac{x+3}{5} = \frac{y-1}{2} = \frac{z+4}{3} ?$$

(A)  $\sqrt{21}$  (B)  $\sqrt{11}$  (C) 2 (D) 1

3. Given that  $f(0)=g(0)=1$ ,  $f'(1)=-1/3$ ,  $g'(0)=1/3$ . What is the value of the derivative of  $f(x+g(x))$  with respect to  $x$  at  $x=0$  ?

(A)  $-4/9$  (B)  $2/9$  (C)  $1/3$  (D) zero.

4. The region in the first quadrant enclosed by parabola  $y = x^2$ ,  $y$ -axis and the line  $y=1$  is revolved about the line  $x = \frac{3}{2}$  to generate a solid. What is the volume of the solid?

(A)  $\pi$  (B)  $2\pi$  (C)  $6\pi$  (D)  $3\pi/2$

5. What is the length of the curve  $x = \int_0^y \sqrt{\sec^4 t - 1} dt$ ,  $-\pi/4 \leq y \leq \pi/4$  ?

(A) 6 (B) 2 (C)  $2\pi$  (D) 1

6. What is the area of the surface generated by revolving the curve  $y=x^3$ ,  $0 \leq x \leq 1/2$ , about  $x$ -axis?

(A)  $61\pi/1728$  (B)  $2\pi/3$  (C)  $3/4$  (D)  $7/8$

7. What is the curvature of the curve  $y = \ln(\cos x)$ ,  $-\pi/2 < x < \pi/2$  at the point of inflection?

(A) 1 (B) 2 (C) 0 (D) None of these.

8. If  $|a|$  is much greater than  $|b|, |c|$  and  $|d|$ , to which of  $a, b, c$  and  $d$  is the value of the function  $f(a, b, c, d) = ad - bc$  is most sensitive?

(A)  $a$  (B)  $b$  (C)  $c$  (D)  $d$ .

