Jessore Board 2016

Time — 35 minutes Marks — 35 **Higher Mathematics: MCQs** Subject Code | 1 | 2 | 6 |

*[Answer **all** the questions. Each question corries **one** mark. Block fully, with a ball-point pen, the circle of the letter that stands for the correct/best answer in the "Answer Sheet" for Multiple Choice Questions Examination. **Candidates are asked not to leave any mark or spot on the question paper.**]*

1. Which country belongs to George Cantor?
a Britain b Italy
c France d Germany

2. If F(x) = |x| then which one is the value of F(–3)?
a –3 b 0 c 3 d ±3

3. If p(x) = $x^2 - 5x + 6$ and p(x) is divided by (x – 4) then which one is the remainder of p(x)?
a 2 b 3 c 4 d x + 2

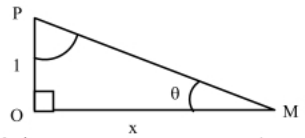
4. "In a cyclic quadrilateral the area of the rectangle contained by the two diagonals is equal to the sum of the area of the two rectangles contained by the two opposite sides." The theorem is called—
a Pythagoras' theorem
b Apolloneous' theorem
c Ptolemy's theorem
d Brahmmagupta's theorem

5. If $\left(\frac{5b}{a}\right)^{2x-6} = 1$ then what is the value of x?
a 1 b 2 c 3 d 6

6. What is the sum up to infinity in the series $\frac{1}{3}+\frac{1}{3^2}+\frac{1}{3^3}+$ .....?
a 0 b $\frac{1}{3}$ c $\frac{1}{2}$ d 1

7. i. Circumference = $2\pi \times$ radius
ii. Radian angle is a constant angle
iii. 1 Radian is expressed in 1^R
Which one of the following is correct?
a i & ii b ii & iii
c i & iii d i, ii & iii

Answer to the questions No. 8 – 10 from the given figure:



8. If ∠P = acute angle then which one is the base of the above figure?
a OP b OM
c PM d $\sqrt{1+x^2}$

9. What is the value of tanθ?
a $\frac{1}{x}$ b $\frac{1}{x^2}$
c $\sqrt{1+x^2}$ d $\frac{1}{\sqrt{1+x^2}}$

10. What is the length of PM?
a $\sqrt{1-x^2}$ b $\frac{1}{x}$
c $\sqrt{1+x^2}$ d $\frac{1}{\sqrt{1+x^2}}$

11. The value of $\cos\left(2\pi+\frac{\pi}{6}\right)$ is—
a $-\frac{\sqrt{3}}{2}$ b $-\frac{1}{\sqrt{3}}$ c $\frac{\sqrt{3}}{2}$ d $\frac{1}{\sqrt{2}}$

12. If $\log_{\sqrt{8}} x = 3\frac{1}{3}$, then the value of x is—
a 32 b 16 c 8 d 64

13. i. "Logarithm" is a Greek word
ii. 'Logos' means discussion and 'arithmas' means number
iii. $\text{Log}_e x = \ln x$
Which one of the following is correct?
a i & ii b ii & iii
c i & iii d i, ii & iii

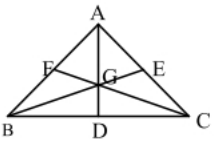
14. What is the number of term in the expansion of $(1+x)^{n-1}$?
a $\frac{n-1}{2}$ b n – 1
c n d n + 1

15. What is the product of slope of the equations x – 2y – 10 = 0 and 2x + y – 3 = 0?
a –2 b –1 c 0 d 1

16. For what values of 'a' the points $(a^2, 2)$, (a, 1) and (0, 0) are collinear?
a 0, –1 b 2, 2 c 0, –2 d 0, 2

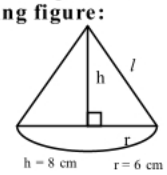
17. If the position vector of P and Q are $(\underline{a}-\underline{b})$ and $(\underline{a}+\underline{b})$ then which one is the value of $\overrightarrow{PQ}$?
a $2\underline{a}$ b $2\underline{b}$ c $\underline{a}+\underline{b}$ d $\underline{a}-\underline{b}$

18.



G is the centroid of the ΔABC and
i. AG : GD = 1 : 2
ii. $\overrightarrow{AB}+\overrightarrow{AC}=2\overrightarrow{AD}$
iii. $\overrightarrow{AD}+\overrightarrow{BE}+\overrightarrow{CF}=0$
Which one of the following is correct?
a i & ii b ii & iii
c i & iii d i, ii & iii

Answer the question no. 19 – 21 for the following figure:



19. What is the length of slant height?
a 8 cm b 9 cm
c 10 cm d 11 cm

20. What is the area of the curved surface?
a 187.5 sq. cm b 188.5 sq. cm
c 287.5 sq. cm d 278.5 sq. cm

21. What is the volume of the given figure?
a 301.59 cubic cm b 300 cubic cm
c 305.59 cubic cm d 412 cubic cm

Answer the questions no 22 – 24 from the following information:
In a bag there are 4 red balls, 5 white balls and 6 black balls. A ball is chosen at random.

22. What is the probability of getting red ball?
a $\frac{4}{15}$ b $\frac{1}{3}$ c $\frac{2}{5}$ d $\frac{3}{5}$

23. What is the probability of getting white ball?
a $\frac{4}{15}$ b $\frac{1}{3}$ c $\frac{2}{5}$ d $\frac{4}{5}$

24. What is the probability of getting black ball?
a $\frac{4}{15}$ b $\frac{1}{3}$ c $\frac{2}{5}$ d $\frac{1}{6}$

25. What is the dom of the function $F(x) = \sqrt{x-1}$?
a x < 1 b x ≤ 1
c x > 1 d x ≥ 1

26. What is the partial fraction of $\frac{x}{x^2-4}$?
a $\frac{1}{x+2}+\frac{1}{x-2}$ b $\frac{1}{2(x+2)}+\frac{1}{2(x-2)}$
c $\frac{1}{2(x+2)}-\frac{1}{2(x-2)}$ d $\frac{1}{x+2}-\frac{1}{x-2}$

27. Which one is the solution of the inequality 3x – 2y – 12 < 0?
a (4, 0) b (4, 3) c (4, –3) d (0, –6)

28. Which one is the factor of $a^3 - a^2 - 10a - 8$?
a (a + 1) (a + 2) (a – 3)
b (a + 1) (a + 2) (a – 4)
c (a + 1) (a – 2) (a + 3)
d (a + 1) (a – 2) (a + 4)

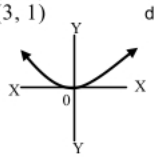
Answer to the questions no. 29 – 31 considering the following information:
Given that, U = {x : x ∈ N, x < 7}
A = {x : x ∈, x is even number and x < 7}
B = {x : x ∈ N, x is odd number and x < 7}
C = {x : x ∈ N, 2 ≤ x < 6}

29. Which is the expression of A′∩B′ in tabler method below?
a { } b {0} c {∅} d U

30. What is the number of elements of P(C)?
a 32 b 16 c 8 d 4

31. Follow the statements:
i. A′∩B′ = (A ∪ B)′
ii. A ∪ (B ∩ C) = (A ∪ B) ∪ (A ∪ C)
iii. n(C) = 4
Which one of the following is correct?
a i & ii b i & iii
c ii & iii d i, ii & iii

32. If $x^y = y^x$ and x = 2y, then which is the value of (x, y)?
a (2, 4) b (4, 2)
c (3, 1) d (1, 3)



33. i. The graph shows the equation of parabola
ii. The equation of the graph is $x^2 = ay$
iii. The equation of the graph is $x = ay^2$
Which one of the following is correct?
a i & ii b ii & iii
c i & iii d i, ii & iii

34. What is the area of the triangle with 3x + 4y = 12, x-axis and y-axis?
a 3 q. units b 4 sq. units
c 6 sq. units d 12 sq. units

35. What is the value of $\frac{\lfloor n-1}{\lfloor n-2}$?
a n b n – 1
c n(n – 1) d n – 2

Ans.																																									
	1	d	2	c	3	a	4	c	5	c	6	c	7	a	8	a	9	a	10	c	11	c	12	a	13	c	14	c	15	b	16	d	17	b	18	b	19	c	20	b		
	21	a	22	a	23	b	24	c	25	d	26	b	27	b	28	b	29	a	30	b	31	b	32	b	33	a	34	c	35	c														