Dinajpur 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. In which case it is possible to draw a right angled triangle when length (cm) of three sides of triangle are given?
a 12, 15, 19 b 6, 7, 8
c 3, 4, 5 d 5, 6, 7

2. Which one is the domain of the function $F(x) = \sqrt{5 - x}$?
a $\{x : x \in \nabla \text{ and } x \le 5\}$
b $\{x : x \in \nabla \text{ and } x < 5\}$
c $\{x : x \in \nabla \text{ and } x \ge 5\}$
d $\{x : x \in \nabla \text{ and } x > 5\}$

3. What is the value of the half of the supplementary angle of 80°?
a 100° b 90° c 50° d 25°

4. What is the discriminant of the equation $4x^2 - 3x - 2 = 0$?
a 41 b 23 c −23 d −41

Answer the questions No. 5 and 6 based on the following information:
$p(x) = 2x^4 - 6x^3 + 5x - 2$.

5. p(2) = ?
a −92 b −8 c 8 d 92

6. What is the remainder when p(x) is divided by 2x + 1?
a −29 b $\frac{-29}{8}$ c $\frac{29}{8}$ d 29

7. In the expansion of $\left(x^2 + \frac{1}{x^2}\right)^4$, what is the value of the term independent of x?
a 4 b 6 c 8 d 10

8. What is the distance between the points (2, 2) and (0, −1)?
a 13 b 5 c $\sqrt{13}$ d $\sqrt{5}$

Answer the question no. 9 and 10 based on the following information:
By throwing 6 times of a coin we find head 36 times.

9. What is the relative frequency number of head?
a 0.753 b 0.735 c 0.573 d 0.375

10. What is the relative frequency number of tail?
a 0.375 b 0.50 c 0.75 d 0.625

11. What is the probability getting a prime number and less than 5 on the throw of an unbiased dice?
a $\frac{1}{4}$ b $\frac{1}{3}$ c $\frac{1}{2}$ d $\frac{3}{4}$

12. The radius of a semi circle is 4 cm. If the semi circle is revolved about its diameter, the obtained solid will be—
i. a cone ii. a sphere
iii. The area of the surface of the solid is 64π cm^2
Which one of the following is correct?
a i and ii b i and iii
c ii and iii d i, ii and iii

Answer the question No. 13 and 14 based on the following information:
A spherical ball of circumference 44 cm exactly fits into a cubical box.

13. What is the radius of the spherical ball in cm (approximately)?
a 7 b 8 c 9 d 14

14. What is the volume of the cube in cubic cm (Approximately)?
a 2744 b 3375 c 2197 d 2932

15. If $\underline{u}$ is an any non zero vector and $m \in \nabla$, $m > 0$, then—
i. Direction of $m\underline{u}$ and that of $\underline{u}$ are opposite
ii. Direction of $m\underline{u}$ and that of $\underline{u}$ are same
iii. $m\underline{u} \ne 0$
Which one of the following is correct?
a i and ii b i and iii
c ii and iii d i, ii and iii

16. If the position vector of P is $\underline{a}$ and position vector of Q is $\underline{b}$, then $\overrightarrow{PQ}$ = ?
a $\underline{b} - \underline{a}$ b $\underline{b} + \underline{a}$
c $\underline{a} + \underline{b}$ d $\underline{a} - \underline{b}$

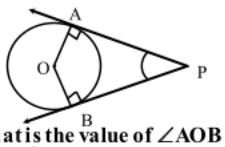
Answer question No. 17 and 18 based on the following information:
The point p(x, 3) lies on the straight line y = 4x + 2.

17. Which one of the following is the coordinate of p?
a $\left(\frac{5}{4}, 3\right)$ b $\left(\frac{1}{4}, 3\right)$
c $\left(\frac{1}{2}, 3\right)$ d (4, 3)

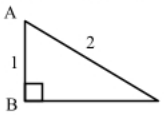
18. What is the coordinate of the point on which the straight line intersect x-axist?
a (2, 0) b (0, 2)
c $\left(0, -\frac{1}{2}\right)$ d $\left(-\frac{1}{2}, 0\right)$

19. If n = 5, then the coefficients of the expansion of $(1 + y)^n$ are—
a 1 3 3 1 b 1 4 6 4 1
c 1 5 10 10 5 1 d 1 3 5 3 1

20. What is the sum of the opposite angle of a quadrilateral inscribed in a circle in radian?
a $\frac{\pi}{2}$ b π c $\frac{3\pi}{2}$ d 2π

21.


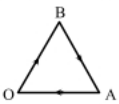
What is the value of ∠AOB in the above figure?
a $\frac{\pi}{4}$ b $\frac{\pi}{2}$ c $\frac{2\pi}{3}$ d $\frac{3\pi}{2}$

Answer question No. 22 and 23 based on the following information:


22. sec C = ?
a 2 b $\frac{2}{\sqrt{3}}$ c $\frac{\sqrt{3}}{2}$ d $\frac{1}{2}$

23. What is the value of $\frac{2 \tan A}{1 - \tan^2 A}$
a $-\sqrt{2}$ b $-\sqrt{3}$
c $\sqrt{2}$ d $\sqrt{3}$

24. If θ = 360°, then—
i. $\cos\left(\theta - \frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}$ ii. $\cot\left(\theta + \frac{\pi}{6}\right) = \sqrt{3}$
iii. $\tan\left(\theta - \frac{\pi}{4}\right) = 1$
Which one of the following is correct?
a i and ii b i and iii
c ii and iii d i, ii and iii

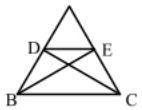
25.


In the above figure $\overrightarrow{OB} + \overrightarrow{BA} + \overrightarrow{AO}$ =?
a $-\overrightarrow{OA}$ b $\overrightarrow{OA}$
c $\overrightarrow{AO} + \overrightarrow{AO}$ d $\overrightarrow{AO} + \overrightarrow{OA}$

26. i. $\log_a p = \log_b p \times \log_a b$
ii. $\log_a\sqrt{a} \times \log_b\sqrt{b} \times \log_c\sqrt{c} = \frac{1}{8}$
iii. $\log_a b = \frac{1}{\log_b a}$
Which one of the following is correct?
a i and ii b i and iii
c ii and iii d i, ii and iii

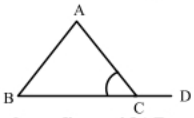
27. How many dimension of a sphere?
a 2 b 3 c 4 d 1

28. If in the triangle ABC, median AD = 5 and side BC = 6, then $AB^2 + AC^2$ = ?
a 34 b 68 c 78 d 112

29.


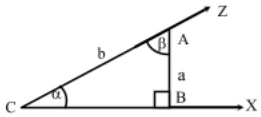
In the figure, if BC||DE, then—
i. $\frac{AB}{AD} = \frac{AC}{AE}$ ii. ∠AED = ∠ACB
iii. The hight of ΔBDC and ΔBEC are same
Which one of the following is correct?
a i and ii b i and iii
c ii and iii d i, ii and iii

30. If $ax^2 + bx + c = 0$ is a quadratic equation then,
i. $a \ne 0$
ii. Discriminant = $b^2 - 4ac$
iii. The equation has only one root
Which one of the following is correct?
a i and ii b i and iii
c ii and iii d i, ii and iii

31.


In the above figure if AB = AC; then—
a sin ∠ACD = cos 55°
b sin ∠ABC = sin 55°
c cos ∠BAC = sin 40°
d sin ∠ACD = cosec 55°

32. Which one of the following is domain of $f(x) = |x|$?
a $\{x \in \nabla : x < 0\}$ b $\nabla +$
c $\{x \in \nabla : x \ge 0\}$ d ∇

33.


If U = A ∪ B and n(u) = 120, then what is the value of 2x in the above venn-diagram?
a 15 b 17 c 20 d 30

34. $\log_4 2 + \log_6\sqrt{6}$ = ?
a $\frac{1}{2}$ b $\frac{1}{3}$ c $\frac{3}{2}$ d 1

35. If $(\sqrt{3})^{x+5} = (\sqrt[3]{3})^{2x+5}$, then what is the value of x?
a 7 b 6
c 5 d 4

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