

# NTSE

## Clock Test

### CLOCK – TEST

#### Important Facts

- ❖ Minute hand and hour hand coincides once in every hour. They coincide 11 times in 12 hours and 22 times in 24 hours.
- ❖ They don't coincide between 12 and 1 O'clock.
- ❖ Minute hand and hour hand are opposite once in every hour. They do it 11 times in 12 hours and 22 times in 24 hours.
- ❖ It doesn't happen between 6 to 7 O'clock.
- ❖ Both hands (minute and hour) are perpendicular twice in every hour. 22 times in 12 hours and 44 times in 24 hours.
- ❖ In one minute, hour hand moves  $1/2^0$  and minute hand moves  $6^0$ . In one hour, hour hand moves  $30^0$  and minute hand moves  $360^0$ .
- ❖ In an hour, minute hand moves 55 minutes ahead of hour hand.

**Ex 1.** At what time between 3 O'clock will the two hands coincide?

**Sol.** At 3 o'clock the distance between the two hands is 15 minutes when they coincide with each other the distance between the two hands will be 0 min. So, the time taken  $(15+0) = 15$  minutes.

∴ Minute hand is 55 min. ahead of hour hand in 60 min.

∴ Minute hand is 1 min. ahead of hour hand in  $\frac{60}{55}$  min.

∴ Minute hand is 15 min. ahead of hour hand in  $\frac{60 \times 15}{55} = \frac{180}{11} = 16\frac{4}{11}$  min.

Hence the right time is  $16\frac{4}{11}$  minute past 3.

**Ex 2.** At what time between 2 O'clock and 3 O'clock will the two hands be opposite?

**Sol.** At 2 O'clock the distance between the two hands is 10 minutes. When they are at 30 minutes distance, they are opposite to each other. The time taken  $(30+10) = 40$  min.

∴ Minute hand is 55 min. ahead of hour hand in 60 min.

∴ Minute hand is 1 min. ahead of hour hand in  $\frac{60}{55}$  min.

∴ Minute hand is 40 minutes ahead of hour hand in  $\frac{60 \times 40}{55} = \frac{480}{11} = 43\frac{7}{11}$  min.

Hence, the right time is  $43\frac{7}{11}$  min. past 2.

**Ex 3.** At what time between 4 O'clock and 5 O'clock will the hands are perpendicular?

**Sol.** At 4 O'clock the distance between the two hands is 20 min. When they are at 15 minutes distance, they are perpendicular to each other.

**Case-I** When the time taken  $(20-15) = 5$  min.

∴ Minute hand is 55 min. ahead of hour hand in 60 min.

∴ Minute hand is 5 min. ahead of hour hand in  $\frac{60 \times 5}{55} = \frac{60}{11} = 5\frac{5}{11}$  min.

**Case-II** When the time taken  $(20+15) = 35$  min.

∴ Minute hand is 55 min. ahead of hour and in 60 min.

∴ Minute and is 35 min. ahead of hour hand in  $\frac{60 \times 35}{55} = \frac{420}{11} = 38\frac{2}{11}$  min. past 4.

#### MIRROR IMAGE OF CLOCK

❖ If the time is between 1 O'clock to 11 O'clock, then to find the mirror image, time is subtracted from 11 : 60.

❖ If the time is between 11 O'clock to 1 O'clock, then to find the mirror image, time is subtracted from 23 : 60.

**Ex 4.** The time in the clock is 4 : 46, what is the mirror image?

**Sol.**  $(11:60) - (4:46) = 7:14$ .

**Ex 5.** The time in the clock is 12 : 35, then find its mirror image.

**Sol.**  $(23:60) - (12:35) = 11:25$ .

#### ANGLE BETWEEN TWO HANDS

❖ Angle are of two types:

**Positive angle:** It is obtained by moving from hour hand to minute hand moving in clockwise direction.

**Negative angle:** It is obtained by moving from minute hand to hour hand.

❖ Both types of angles are  $360^0$  in total. If one angle is known, other can be obtained by subtracting from  $360^0$ .

**Ex 6.** At 4 : 30, what is the angle formed between hour hand and minute hand?

**Sol.** At 4 O'clock angle between hour and min. hand is of  $120^\circ$ .

$\therefore$  In 30 min. minute hand make an angle of  $180^\circ$ .

So, the resultant angle is  $0180^\circ - 120^\circ = 60^\circ$ .

But in 30 min. hour hand will also cover an angle of  $15^\circ$ .

Hence, the final angle between both hands is  $60^\circ - 15^\circ = 45^\circ$ .

**Ex 7.** A bus for Delhi leaves every thirty minutes from a bus stand. An enquiry clerk told a passenger that the bus had already left ten minutes ago and the next bus will leave at 9.35 A.M. At what time did the enquiry clerk give this information to the passenger?

**Sol.** Bus leaves after every 30 minutes.

The next bus will leave at 9:35 A.M.

The last bus left at  $9:35 - 0:30 = 9:05$  A.M.

But clerk said that bus had left 10 minutes earlier.

$\therefore 9:05 + 0:10 = 9:15$  A.M.

### EXERCISE

1. At what time are the hand of a clock together between 5 O'clock and 6 O'clock?

(A)  $33\frac{3}{11}$  minutes past 5.

(B)  $28\frac{3}{11}$  minutes past 5.

(C)  $27\frac{3}{11}$  minutes past 5.

(D)  $26\frac{3}{11}$  minutes past 5.

2. At what time between 9 O'clock and 10 O'clock will the hands of a clock be in the straight line, but not together?

(A)  $16\frac{4}{11}$  minutes past 9.

(B)  $16\frac{4}{11}$  minutes past 9.

(C)  $16\frac{6}{11}$  minutes past 9.

(D)  $16\frac{9}{11}$  minutes past 9.

3. At what time between 5 O'clock & 5 : 30 will the hands of a clock be at right angle?

(A)  $10\frac{10}{11}$  minutes past 5.

(B)  $11\frac{5}{11}$  minutes past 5.

(C)  $9\frac{10}{11}$  minutes past 5.

(D)  $10\frac{9}{11}$  minutes past 5.

4. What will be the angle between the two hands at 05 : 40?

(A)  $60^\circ$  (B)  $50^\circ$

(C)  $70^\circ$  (D)  $86^\circ$

5. Ajay left home for the bus stop 15 minutes earlier than usual. It takes 10 minutes to reach the stop. He reached the stop at 8.40 A.M. What time does he usually leave home for the bus stop?

(A) 8.30 A.M. (B) 8.45 A.M.

(C) 8.55 A.M. (D) Data inadequate

6. The priest told the devotee, "The temple bell is rung at regular intervals of 45 minutes. The last bell was rung five minutes ago. The next bell is due to be rung at 7.45 A.M." At what time did the priest give this information to the

(A) 7.40 A.M. (B) 7.05 A.M.

(C) 6.55 A.M. (D) None of these

7. A tired worked slept at 7.45 P.M. If he rose at 12 noon, for how many hours did he sleep?

(A) 5 hours 15 min (B) 16 hours 15 min

(C) 12 hours (D) 6 hours 45 min

8. How many times are the hands of a clocks perpendicular in a day?

(A) 42 (B) 48

(C) 44 (D) 46

9. If a clock shows 04:28 then its mirror image will be?

(A) 07:42 (B) 04:32

(C) 08:32 (D) 08:42

10. A clock show 30 minutes past 2 O'clock, when both the hands of the clock are rotated by  $90^\circ$  in clockwise direction. What time will the clock show?

(A) 04:45 (B) 05:45

(C) 11:15 (D) 11:16

11. How many times are the hands of a clocks coincide in a day?

(A) 10 (B) 11

(C) 12 (D) 22

12. At what time between 2 O'clock and 3 O'clock the hands of a clock will make an angle of  $160^\circ$ ?

(A) 20 minutes past 2 (B) 30 minutes past 2

(C) 40 minutes past 2 (D) 50 minutes past 2

13. Ashish leaves his house at 20 minutes to seven in the morning, reaches Kunal's house in 25

minutes, they finish their breakfast in another 15 minutes and leave for their office which takes another 35 minutes. At what time do they leave Kunal's house to reach their office?

- (A) 7.40 A.M. (B) 7.20 A.M.  
(C) 7.45 A.M. (D) 8.15 A.M.

**14.** The train for Lucknow leaves every two and a half hours from new Delhi Railway Station. An announcement was made at the station that the train for Lucknow had left 40 minutes ago and the next train will leave at 18.00 hrs. At what time was the announcement made?

- (A) 15.30 hrs (B) 17.10 hrs  
(C) 16.00 hrs (D) None of these

**15.** How many times the two hand of a watch from right angle from 12 O'clock noon to 6 O'clock right angle from 12 O'clock noon to 6 O'clock evening.

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- (A) 6 (B) 10  
(C) 11 (D) 12

**16.** In a period of 12 hours how many times hours hand and minutes hand of a clock are in a straight line facing the opposite direction?

- (A) 22 times (B) 11 times  
(C) 12 times (D) 24 times

## ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>Ans.</b>	<b>C</b>	<b>B</b>	<b>A</b>	<b>C</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>C</b>	<b>B</b>	<b>B</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>D</b>	<b>C</b>
<b>Que.</b>	<b>16</b>														
<b>Ans.</b>	<b>B</b>														