# Time, Clock and Calendar

## **Self-Evaluation Test**

1. Reaching the place of meeting on Tuesday 15 minutes before 08:30 hours, Anju found herself half an hour earlier than the man who was 40 minute late. What was the scheduled time of the meeting?

(a) 8:00 hrs	(b) 8:05 hrs
(c) 8:15 hrs	(d) 8:45 hrs

(e) None of these

2. A century	leap year i	s divisible by:
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(a) 4	(b) 8
(c) 16	(d) 400

- (e) None of these
- 3. A 260 metres long train runs at a speed of 55 km / h. How much time will it take to cross a platform to 90 metres long?
  - (a) 30 seconds (b) 36 seconds (c) 33 seconds (d) 40 seconds

  - (e) None of these
- 4. A clock shows the time as 3:30 pm. If the minute hand gains 2 minutes every hour, how many minutes will the clock gain by 4 am?

(a) 23 Minutes	(b) 24 Minutes
(c) 25 Minutes	(d) 26 Minutes
(e) None of these	

5. If in a clock the numbers 1 to 12 are replaced with alphabet starting from A, then which of the following options shall indicate the time as 10' O clock?

(a) J - L	(b) A - L
(c) K - L	(d) D - E
(e) None of these	

6. An accurate clock shows 8 o'clock in the morning. By how many degrees, the hour hand would have rotated when the clock shows 2 o'clock in the afternoon?

(a)	144°	(b)	150°
(u)	TTT	(0)	100

- (c) 168° (d) 180°
- (e) None of these

The reflex angle between the hands of a clock at 10:25 is how much?

(a)  $180^{\circ}$  (b)  $192\frac{1}{2}^{\circ}$ 

(c)  $195^{\circ}$  (d)  $197\frac{1}{2}^{\circ}$ 

(e) None of these

7.

- 8. If a clock starts moving at noon, by 10 minutes past 5 the hour hand of the clock has moved by how many degree?
  - (a) 145° (b) 150°

(c)  $155^{\circ}$  (d)  $160^{\circ}$ 

(e) None of these

- 9. A watch which gains 5 second every 3 minute was set right at 7 am. In the afternoon of the same day, when the watch indicated quarter past 4 o'clock, the true time will be what?
  - (a)  $59\frac{7}{12}$  minutes past 3 (b) 4 pm (c)  $58\frac{7}{12}$  minutes past 3 (d)  $2\frac{3}{11}$  minute past 4 (e) None of these

#### 10. At what time between 4 and 5 o'clock will the hands of a clock be at right angle? (a) 30 minutes past 4

(b)  $16\frac{3}{4}$  minutes past 4 (c)  $38\frac{2}{11}$  minutes past 4 (d) 33 minutes past 4 (e) None of these

11. At what angle the hands of a clock are inclined at 15 minutes 5?

(a) 
$$72\frac{1}{2}$$
 (b)  $67\frac{1}{2}$   
(c)  $58\frac{1}{2}$  (d)  $64^{\circ}$ 

(e) None of these

12. How much does a watch lose per day, if its hands coincide every 64 minutes?

(a) $32\frac{8}{11}$ minutes	(b) $36\frac{5}{11}$ minutes	
(c) 90 minutes (e) None of these	(d) 96 minutes	

13. How many times are the hands of a clock at right angles in a day?

(a) 24	(b) 48
(c) 22	(d) 44

- (e) None of these
- 14. Two brothers were expected to return home on the same day. Rajat returned 3 days earlier but Rohit returned 4 days later. If Rajat returned on Thursday, then what was the expected day when both the brothers were to return home and when did Rohit return?

(a) Wednesday, Sunday (b) Thursday, Thursday (c) Sunday, Thursday (d) Monday, Friday

- (e) None of these
- 15. Bunny's brother Sunny is 562 days older than him while his sister jenny is 75 weeks older than Sunny. If Jenny was born on Tuesday, on which day was Bunny born?
  - (a) Monday (b) Tuesday (d) Thursday
  - (c) Friday
  - (e) None of these
- 16. My uncle shall visit me after 64 days of my father's birthday. If my father's birthday falls on Tuesday, what shall be the day of Uncle's visit?
  - (a) Monday (b) Tuesday (c) Wednesday (d) Thursday (e) None of these
- 17. If 21st November falls five days before Wednesday then what will be the day of 25th

#### **December?**

- (a) Wednesday
- (b) Sunday
- (c) Friday
- (d) Thursday
- (e) None of these

- 18. Arjun remembers that his mother's birthday is between fifteenth and twentyfirst November. His sister remembers that their mother's birthday is between nineteenth and twenty-fifth November. If both of them remember correctly, on which day will actually be their mother's birthday?
  - (a) Twentieth
  - (b) Twenty-first
  - (c) Twentieth or Twenty-first
  - (d) Twenty-second
  - (e) None of these
- 19. 1.12.91 is the first Sunday. Which is the fourth Tuesday of December 91?
  - (a) 31.12.91 (b) 24.12.91 (c) 17.12.91 (d) 26.12.91 (e) None of these
- 20. If 3rd December 1999 is Sunday, then what day is 3rd January 2000?
  - (a) Friday
- (b) Wednesday
- (c) Thursday
- (e) None of these
- (d) Sunday

#### Answer - Key

<b>1.</b> (B)	<b>2.</b> (D)	<b>3.</b> (B)	<b>4.</b> (C)	<b>5.</b> (A)
<b>6.</b> (D)	<b>7.</b> (D)	<b>8.</b> (C)	<b>9.</b> (B)	<b>10.</b> (C)
<b>11.</b> (B)	<b>12.</b> (A)	<b>13.</b> (D)	<b>14.</b> (C)	<b>15.</b> (E)
<b>16.</b> (A)	<b>17.</b> (D)	<b>18.</b> (A)	<b>19.</b> (B)	<b>20.</b> (B)

## **Explanation for Selected Questions**

#### 1. Explanation

Option (b) is correct. Anju reaches 15 minutes before 8:30 hrs i.e., at 8:15 hrs. The man arrives on that place at (8:15+0:30) hrs = 8:45 hrs.

The man was 40 minute late, so he expected to come at 8:05 hrs. So, the correct time of meeting was 8:05 hrs.

#### 2. Explanation

Option (d) is correct. A century leap year is divisible by 400.

#### 3. Explanation

Option (b) is correct. Total length to be covered by the train = 260 + 290 = 550 metres.

Time taken to cross-platform =  $\frac{550}{55} \times \frac{3600}{1000} = 36$  seconds

#### 4. Explanation

Option (c) is correct. Hours between 3:30 pm and 4 am are  $12\frac{1}{2}$  hours .

Number of minutes gained will be  $12\frac{1}{2} \times 2 = 25$ 

minutes.

#### 5. Explanation

Option (a) is correct.



It is clear from above figure that J - L will indicate the time 10 o, clock.

#### 6. Explanation

Option (d) is correct. Angle traced by the hour

hand in 6 hours = 
$$\left(\frac{360}{12} \times 6\right)^\circ = 180^\circ$$
.

#### 7. Explanation

Option (d) is correct. Angle traced by hour hand

in 
$$\frac{125}{12}$$
 hrs =  $\left(\frac{360}{12} \times \frac{125}{12}\right)^{\circ} = 312\frac{1}{2}^{\circ}$   
Angle traced by minute hand

$$25 \operatorname{min} = \left(\frac{360}{12} \times 25\right) = 150^{\circ}$$

Angle between minute and hour hand of clock at

10: 25 = -
$$\left(312\frac{1}{2} - 150\right)^{\circ} = 162\frac{1}{2}^{\circ}$$
  
∴ Reflex angle = 360° - 162 $\frac{1}{2}^{\circ} = 197\frac{1}{2}$ 

#### 8. Explanation

Option (c) is correct. Angle traced by hour hand in  $12 \text{ hrs} = 360^{\circ}$ .

Angle traced by hour hand in 5 hrs 10 min. i.e.,

in 
$$\frac{31}{6}$$
 hrs =  $\left(\frac{360}{12} \times \frac{31}{6}\right)^{\circ} = 155^{\circ}$ 

#### 9. Explanation

Option (b) is correct. Time from 7 am to 4:15 pm

$$=9$$
 hrs 15 minute  $=\frac{37}{4}$  hrs

3 minutes 5 seconds of this clock = 3 minute of the correct clock

$$\Rightarrow \frac{37}{720}$$
 hrs of this clock  $= \frac{1}{20}$  hrs of the correct clock.

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$$\Rightarrow \frac{37}{4} \text{ hrs of this clock} = \left(\frac{1}{20} \times \frac{720}{37} \times \frac{37}{4}\right) \text{ hrs of}$$

the correct clock.

= 9 hrs of the correct clock.

 $\therefore$  The correct time is 9 hrs after 7 am i.e., 4 pm.

#### 10. Explanation

Option (c) correct. Between 4 and 5 o'clock the hands of the clock will be at right angle twice. First situation will occur when minute hand is 15 minute space behind the hour hand and second when minute hand is 15 minute ahead of the hour hand.



Figure (ii) shows the position when minute hand is 15 minute behind the hour hand. To come at this position minute hand has travelled 5 minute space from the position at 4 o'clock. Now, 55 minute are gained in 60 minute.

5 minute will be gained in 
$$\frac{60}{55} \times 35 = \frac{420}{11}$$
 minute  $= 35\frac{2}{11}$  minute

It means that hands of the clock will be at right

angle at  $5\frac{5}{11}$  minute past 5.

Fig. (iii) shows the position when minute hand is 15 minute ahead the hour hand. To come at this position minute hand has travelled 35 minute spaces from the position at 4 o'clock.

Now, 55 minute are gained in 60 minute

35 minute will be gainer in  

$$\frac{60}{55} \times 35 = \frac{420}{11}$$
 minute =  $35\frac{2}{11}$  minute

in

It means that second position will come at  $38\frac{2}{11}$ 

minute past 4.

Now, in the options  $38\frac{2}{11}$  minute past 4 is available as option (C). Hence, it is the correct answer.

#### 11. Explanation

Option (b) is correct. At 15 minute past 5, the minute hand is at 3 and hour hand slightly ahead of 5.

Now, the angle through which hour hand shifts in

15 min ute =  $\left(15 \times \frac{1}{2}\right)^\circ = 7\frac{1}{2}^\circ$ ∴ Angle at 15 minute past  $5 = \left(60 + 7\frac{1}{2}\right)^\circ = 67\frac{1}{2}^\circ$ 

#### 12. Explanation

Option (a) is correct. 55 minute are covered in 60 minutes.

60 minute are covered in  $\left(\frac{60}{55} \times 60\right)_{\min} = 65\frac{5}{11} \min$ Loss in 64 min. =  $\left(65\frac{5}{11} - 64\right) = \frac{16}{11} \min$ Loss in 24 hrs =  $\left(\frac{16}{11} \times \frac{1}{24} \times 60\right)_{\min} = 32\frac{8}{11} \min$ 

#### 13. Explanation

Option (d) is correct. We know that hands of a clock are at right angle twice in every hour but two positions of the hands of clock i.e., at 3 o'clock and 9 o'clock are identical. So, they are at right angles 22 times in 12 hours and therefore, in 24 hours or in a day they are at right angle 44 times. So, the correct answer is (D).

### 14. Explanation

Option (c) is correct. Rajat returned on Thursday. But Rajat is expected to return after 3 days. i.e., on Sunday. Rohit returned 4 days after Sunday i.e. on Thursday.

#### 15. Explanation

Option (e) is correct. Sunny is older than Bunny by 562 days.

Jenny is older than Sunny by  $75 \times 7 = 525$  days

Thus, Bunny is younger than Jenny by 525 + 562 (= 1087) days

Now,  $1087 \div 7$  gives 2 as remainder.

So, if Jenny was born on Tuesday, then Bunny was born 2 days later, i.e., on Thursday.

#### 16. Explanation

Option (a) is correct. My father's birthday is on Tuesday. Now,  $64 \div 7$  gives 1 as remainder. So, 63rd day will be Tuesday and one day ahead is the day when uncle shall visit i.e., on Wednesday.

#### 17. Explanation

Option (d) is correct. The day falls 5 days before Wednesday is Friday. So, 21st November is Friday. Now, number of days between 21st November and 25th December =9+25=34days.

Now,  $34 \div 7$  gives 6 as remainder.

So, it will be Thursday, i.e. one day before Friday on 25th December.

#### 18. Explanation

Option (a) is correct. Mother's birthday 15<sup>th</sup> Nov. 21<sup>th</sup> Nov. According According to Arjun According to his sister 19<sup>th</sup> Nov. 25<sup>th</sup> Nov.

#### 19. Explanation

Option (b) is correct. The day falls on 01.12.91 is first Sunday. It means the first Tuesday falls on 3.12.91. So, IInd Tuesday falls on 10.12.91, IIIrd Tuesday on 17.12.91 and IVth Tuesday falls on 24.12.91.

### 20. Explanation

Option (b) is correct. 3rd December 1999 is Sunday. Number of days in-between 3rd December 1999 and 3rd January 2000 = 28 + 3 = 31 days.

Now, 31-7 gives 3 as remainder.

So, 31st December 1999 will be Sunday and 3rd January 2000 will be 3 days ahead i.e., Wednesday.