S2 Music Practice Paper 1 | Pitch, note values, tempo, scales, chords, orchestra

Junior Secondary Music

S2 Music practice paper: pitch and frequency, note values, tempo, scales, intervals, chords and concert planning. 100 marks with full answers.

1. Pitch and frequency (16 marks)

Show working in parts (a) to (d).

#	Question	Answer and marking notes
1	(a) The standard note A4 has frequency 440 Hz. Find the frequency of A5 one octave above.	An octave has a frequency ratio of 2:1, so 440 x 2 = 880 Hz.
2	(b) A perfect fifth has a frequency ratio of 3:2. Find the frequency of E5, a perfect fifth above A4.	Frequency = 440 x 3 / 2 = 660 Hz.
3	(c) A note has frequency 264 Hz. Find the frequency one octave below.	One octave below = 264 / 2 = 132 Hz.
4	(d) An instrument spans three octaves. Find the ratio of its highest to lowest frequency.	Each octave doubles the frequency, so three octaves give 2^3 = 8, i.e. a ratio of 8:1.

2. Note values and time signatures (18 marks)

Parts (a) to (c) are short answers; show working in (d).

#	Question	Answer and marking notes
5	(a) In 4/4 time, how many sixteenth notes fill one bar?	4/4 has 4 beats per bar and 4 sixteenths per beat, so 4 x 4 = 16.
6	(b) A minim, two quavers and four semiquavers together make how many beats? Do they fill one 4/4 bar?	2 + 1 + 1 = 4 beats, which exactly fills a 4/4 bar of 4 beats.
7	(c) In 3/4 time, what is the greatest number of quavers in one bar?	3 beats per bar with 2 quavers per beat gives at most 3 x 2 = 6.
8	(d) In 6/8 time the dotted crotchet is one beat. How many beats are in a bar? How many beats in 24 bars?	A 6/8 bar has 6 quavers and each beat has 3, so a bar has 6 / 3 = 2 beats; 24 bars give 24 x 2 = 48 beats.

3. Tempo and performance time (16 marks)

Tempo is given in BPM (beats per minute); show working throughout.

#	Question	Answer and marking notes
9	(a) The tempo is BPM 120. Find the duration of one beat in seconds.	One beat = 60 / 120 = 0.5 s.

#	Question	Answer and marking notes
10	(b) In 4/4 at BPM 120, how many seconds do 30 bars take?	Each beat is 0.5 s, so a bar is 4 x 0.5 = 2.0 s and 30 bars take 30 x 2.0 = 60 s (1 minute).
11	(c) In 4/4 at BPM 90, how many seconds do 36 bars take?	Each beat is 60 / 90 = 0.667 s, a bar is 4 x 0.667 = 2.667 s, so 36 bars take 96.0 s (1 minute 36 seconds).
12	(d) The same music is played at BPM 120 instead of BPM 90. By what percentage does the playing time fall?	Time is inversely proportional to tempo, so the fall is 1 - 90/120 = 0.25, i.e. 25%.

4. Scales and intervals (18 marks)

Parts (a) to (c) are short answers; add up the steps in (d).

#	Question	Answer and marking notes
13	(a) A major scale follows the pattern tone-tone-semitone-tone-tone-tone-semitone. How many semitones are in one octave?	2 + 2 + 1 + 2 + 2 + 2 + 1 = 12 semitones.
14	(b) How many semitones are there in a perfect fifth and in a major third?	A perfect fifth has 7 semitones and a major third has 4; they differ by 3 (a minor third).
15	(c) The tonic triad of C major is built from C with a major third and a perfect fifth above it. Name the three notes.	A major third above C is E (4 semitones) and a perfect fifth above is G (7 semitones), so the triad is C, E, G.
16	(d) In the melody C-E-G-C, what is the total number of semitones between successive notes?	C to E is 4, E to G is 3 and G to C is 5, giving 4 + 3 + 5 = 12 semitones (one octave).

5. Chords and harmony (16 marks)

A major triad has frequency ratio 4:5:6; show working throughout.

#	Question	Answer and marking notes
17	(a) A major triad has root 264 Hz. Find the frequencies of the third and the fifth.	One ratio unit = 264 / 4 = 66 Hz, so the third is 66 x 5 = 330 Hz and the fifth is 66 x 6 = 396 Hz.
18	(b) In a major triad, how many semitones lie between root and third, and between third and fifth?	Root to third is 4 semitones (major third) and third to fifth is 3 (minor third), totalling 7 semitones (perfect fifth).
19	(c) A minor triad has 3 semitones between root and third. What is the third of the C minor triad?	Three semitones above C is E flat, so the third is E flat.
20	(d) A major triad has fifth 396 Hz, and the fifth is to the root as 6:4. Find the root frequency.	Root = 396 x 4 / 6 = 264 Hz.

6. Instruments, orchestra and concert planning (16 marks)

Parts (a) to (d) are applied questions; show working.

#	Question	Answer and marking notes
21	(a) A flute spans C4 to C7, three octaves. Find the ratio of its highest to lowest frequency.	Three octaves give 2^3 = 8, so the ratio is 8:1.
22	(b) A concert lasts 90 minutes with a 15-minute interval and 10 pieces. Find the average playing time per piece.	Playing time = 90 - 15 = 75 minutes; average = 75 / 10 = 7.5 minutes, i.e. 7 min 30 s.
23	(c) An orchestra has 48 strings, 12 woodwind, 10 brass and 5 percussion players. Find the total and the percentage of strings.	Total = 48 + 12 + 10 + 5 = 75 players; strings are 48 / 75 x 100% = 64%.
24	(d) A hall has 1,200 seats, 85% are sold, and the average ticket price is 180 dollars. Find the total ticket revenue.	Seats sold = 1,200 x 0.85 = 1,020; revenue = 1,020 x 180 = 183600 dollars.